

The Indo-Iranian *cákri*-type

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This paper discusses the Indo-Iranian reduplicated *i*-adjectives of the type Ved. *cákri*-, Av. *caxri*- ‘doing’. These adjectives are formally associated with the weak stem of the corresponding perfect, but their lexical semantics are not always those expected of an adjectival derivative of the perfect stem. A subgroup of forms is associated with synchronically resultative perfects (*cákri*:- *cakára*, *jágmī*:- *jagáma*, etc.), but pattern functionally as present participles, often with iterative or intensive readings. I show that these “form-meaning mismatch” formations share a number of syntactic properties (accusative case objects, adverbial modification) both in Vedic and in Avestan and are likely to be the starting point of the type. I conclude from this that the synchronic association of the *cákri*-type with the perfect stem is secondary, and that its original derivational basis must have been a different reduplicated verbal (or nominal) category. I furthermore provide arguments that this cannot be one of the synchronic Indo-Iranian reduplicated verbal categories (e.g., the reduplicated present).

§1. The aim of this study is to give an account of a group of Vedic reduplicated nominal stems formed with the suffix *-i-* that are formally associated with the perfect stem of the corresponding verbal root and seem to have a participial function (the “*cákri*-type”).

According to the standard view, the *cákri*-type typically makes agent nouns “mit meist adjektivischer Verwendung” and (sometimes) intensive semantics (AiG II,2: 291ff.). Although these correspond morphologically to the weak stem of the perfect (Barschel 1986: 307), semantically they are much closer to an imperfective present stem. There are thirty-one¹ formations of this type in the Rigveda. The better-attested items are distributed evenly across all ten books (see Table 1 in the appendix). The Avestan evidence confirms that this was an Indo-Iranian type. The literature is somewhat confused on what kind of nominalization this type is: essentially agent nouns, which came to be used as adjectives (AiG II,2: 291ff.), or deverbal adjectival formations (Leumann 1942: 22 n. 1, Barschel 1986: 305). Barschel (p. 307) points out the morphological affiliation of the type to the perfect stem, but fails to notice that it does not always show the semantics expected of a deverbal formation from the

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1. Barschel does not mention °*cācali*- and °*śiśvi*- in his study, presumably because they do not contribute to the question of the accentuation of the type. He also posits two homophonous stems *sāsni*-, where I assume only one, and includes *dīdivi*-, which I exclude because of its composite suffix **-u-i-* (although the formation is of course related). I also exclude the form *sānasī*- ‘profitable, rewarding’ (15x in the RV), which Barschel (1986: 305 n. 4, following Leumann 1942: 22 n. 1) tentatively interprets as a metathesized form of **sāsani*- (*san* ‘win’). The root actually makes a reduplicated *i*-adjective *sāsni*-, which must go back to the laryngeal-loss variant (cf. *pāpri*- vs. *pāpuri*-). At any rate, even without laryngeal loss, a long reduplication vowel would be unexpected. As I argue below, the cases where we find *cákri*-type formations with a long reduplication vowel are regularly those in which the associated perfect stem also has long-vowel reduplication at least in parts of its averbo (*tūtuj*-, *sāsah*-, *yūyudh*-), which is not the case for *san*. There is also reason to believe that these were inner-Indic formations, so that an alleged **sāsani*- would be highly unlikely to be an archaism (as proposed by Leumann, *ibid.*).

perfect stem. He furthermore acknowledges that the slight preference for initial accent that the type displays—twenty of thirty-one stems are accented on the reduplicated syllable—is unexpected under the assumption that the perfect stem was the derivational basis. Barschel (p. 306) proceeds to argue that oxytone accentuation was original to these stems, and that the tendency towards initial accent is part of a broader pattern of innovated accentuation among the Vedic *i*-stems (citing examples such as *cákri-*: *ācakrī-*; *jághni-*: *nijaghnī-*; *sthūri-*: *asthūrī-*, etc., in which the compound form may have preserved the older oxytone accentuation). Since there is no functional difference between the *cákri*-forms with initial accent and the suffix-accented forms, there is no reason not to follow Barschel's analysis with respect to the accentuation. However, I disagree with his conclusion that the entire type had the perfect stem as its derivational basis. In the following, I will show that the core forms of the type do not have the semantics expected of a perfect stem derivative, and that they behave syntactically like participles rather than real agent nouns, in that they assign accusative case to their direct objects and can be modified by adverbs. They differ from other participles, however, in that they are not integrated into the paradigm of a particular tense/aspect stem.

§2. A noticeable feature of the *cákri*-type is its ability to take accusative and dative objects if the corresponding verbal root is transitive, as well as adverbial modifiers. In its simplex attestations, *cákri-* 'making, doing' (*kr* 'do, make, act', 3pl.perf. *cakrúr*) is mostly used predicatively and takes accusative objects:

RV 9.88.4ab: *índro ná yó mahá kármāṇi cākṛir, hantā vṛtrāṅām asi soma pūrbhāt*

Like Indra, who **accomplishes great deeds**, you, Soma, are the slayer of enemies, smashing fortresses.

There is a clear contrast between *kármāṇi cākṛir* "(repeatedly) doing deeds" and the immediately following *hantā vṛtrāṅām* "destroyer of enemies." The latter is a "real" agent noun with a suffix-accented *-tār-* and genitive rather than an accusative complement (but note that there is also a root-accented type that does take accusative objects; see Tichy 1995 on this suffix in general).² The same syntactic behavior is found in the instances where *cákri-* has incorporated a preverb or adverb-like modifier:

RV 6.24.5ab: *anyád adyá kárvaram anyád u śvó, 'sac ca sán múhur ācakrír índrah*

One deed today and another one tomorrow; (thus) Indra instantly **turns that which is not into that which is**.³

This example shows both incorporation of the preverb *ā* and accusative case assignment in a double accusative structure.⁴ Similarly, *jágmī-* 'going' (*gam* 'go, come', 3pl.perf. *jagmúr*) can optionally take an adverbial accusative⁵ (Richtungsakkusativ or accusative of goal) specifying the destination of the verbal action:

2. Geldner (*RV*) actually varies between translating instances of this type as real agent nouns (e.g., "Vollbringer großer Taten" in this passage), participles, and finite relative clauses, independent of their syntactic behavior; Renou (*EVP*) prefers finite relative clauses. In what follows I will translate the nominal complements with the same case as in Vedic unless this makes the result grammatically awkward. Translations are my own unless otherwise indicated.

3. Cf. Geldner, *RV* II: 123.

4. Oldenberg (1909: 383) glosses *ācakrīḥ* as 'herbeischaffend', implying a translation "procuring the unreal and the real," but the double accusative clearly fits better (thus also Grassmann, *WB*: 172).

5. See Levin and Rappaport Hovav 2005: 105 for arguments that such "pseudo-objects" are not actually arguments of the verb, but event delimiting adverbial phrases. However, they do stress that there seems to be a cross-linguistic connection between telicity in unaccusative verbs and accusative case. I will therefore group the instances of Ved. *jágmī-* and Av. **jagmī-* with other verbal adjectives taking accusative objects, acknowledging that there is a structural difference between their arguments and those of *gam*.

RV 2.23.11a: *anānudó vṛṣabhó jágmir āhavám, níṣṭaptā sátrum p̄tanāsu sāsahīḥ|*
āsi satyá ṛṇayā brahmaṇas pate

An unyielding bull, **approaching the fight**,⁶ burning down the enemy, victorious in the battles—
 you are the true avenger of offenses, Brahmaṇas Pati!

jághni- ‘beating, slaying’ (*han* ‘beat, slay, kill’, 3pl.perf. *jaghnur*) provides a clear instance of the modification of this type by an adverb:

RV 9.53.2: *ayá nijaghnr̥ ójasā, rathasamgé dháne hitél*
stāvā ábibhyuṣā hṛdā

Mit diesem (Liede) will ich **mit Kraft zuschlagend** im Wagenkampf bei ausgesetztem Preise
 furchtlosen Herzens lobsingen. (Geldner, *RV* III: 38)

Here, *nijaghnr̥-* is modified by the adverbial instrumental *ójasā* ‘with strength’, a clear indication that we are not dealing with a true agent noun, since these are never modified by adverbs, but with a participial form. Compare the use of *ójasā* with a finite verbal form of *han* in RV 1.80.2: *yénā vṛtrám nír adbhyó, jaghántha vajrinn ójasā . . .* “through which you, o cudgel-carrier, have expelled Vṛtra from the waters with might.” *jághni-* is furthermore attested with an accusative object in RV 9.61.20.

In RV 6.23.4 we find the use of *dadí-* ‘giving’ (*dā* ‘give, donate’, 3pl.perf. *dadúr*; but note that in this case we also find a morphologically corresponding reduplicated present stem), *babhrí-* ‘carrying, bearing’ (*bhr̥* ‘carry, bear’), and *papí-* ‘drinking’ (*pā* ‘drink’) with accusative objects:

RV 6.23.4: *gántéyānti sávanā háribhyām, babhrír̥ vájram papíḥ sómaṃ dadír̥ gāḥ*
 Coming to so many soma-pressings with his pair of flame-colored horses, **carrying a cudgel,**
drinking soma, giving cows, . . .

For *dadí-* we also find three cases of adverbial modification, e.g.:

RV 2.24.13cd: *viḷudvēṣā ánu vása ṛṇám ādadíḥ, sá ha vājí samithé bráhmaṇas pátiḥ*
 Steadfast in his hatred,⁷ **taking his dues according to his wish**,⁸ Brahmaṇas Pati is the one who
 wins the prize in the contest.

Here, *ánu vása* “according to (his) wish” is a subject-oriented adverbial phrase modifying *ādadí-* (cf. Oldenberg 1909: 209). A further indication of the participial status of this form is the incorporation of the preverb *á* ‘to’ from the underlying syntagma *á dā* ‘take (for oneself)’ and the accusative object.

The nine attestations of *pápurī-* and its variant *pápri-* reflect formations to three different Indo-Iranian roots: **parH* ‘fill’ (< PIE **pleh₁/pelh₁*), **par* ‘help (across), save’ (< PIE **per*), and **parH* ‘give, allot’ (< PIE **perh₃*, cf. Gk. πορεῖν). Four instances belonging to the last root behave like participles with respect to case, e.g.:

RV 6.50.13ab: *utá syá deváh savitá bhágo no, páṃ nápād avatu dānu pápriḥ*
 Auch der Gott Savitri, Bhaga, Apam Napat, **der Gaben Spendende**, sollen uns ihre Gunst
 schenken. (Geldner, *RV* II: 153)

In RV 4.23.3 *pápurī-* furthermore takes a dative recipient in the phrase *pápurim̄ jaritré* “(habitually) giving to the singer.” If this were an agent nominal, we would expect *pápurim̄ jaritrúḥ*.

6. “. . . gern in den Streit ziehend” (Geldner, *RV* I: 304); “. . . qui vas (droit) au défi” (Renou, *EVP* 15: 54).

7. Or “die Unnachgiebigen, (. . .) Trotzigen hassend” (Grassmann, *WB*: 1315).

8. “. . . nach Wunsch die Schuld einziehend,” Geldner, *RV* I: 308, cf. also Renou, *EVP* 15: 59.

vavri- ‘cover, shell’ (*vr* ‘cover, surround, restrain’, 3pl.perf. *vavrur*) is clearly a *cákri*-type formation that must have been lexicalized with the meaning ‘shell’ or ‘hiding place’ (< *‘that which covers, covering’, see Tichy 1995). We therefore do not expect to find evidence for “verbal” usage (accusative case, adverbial modification, etc.); this is in fact the case, except for the following passage:

RV 1.54.10cd: *abhīm índro nadyò vavrīnā hitā, víśvā anuṣṭāḥ pravaṇeṣu jighnate*
Indra bekämpft alle **von dem Einsperrer der Flüsse**⁹ gemachten Anstalten in den Strom-
gefallen. (Geldner, *RV* I: 71)

Geldner takes *vavri-* to have the meaning ‘restraining, restrainer’ in this passage, which would then provide an instance of the original meaning of this formation, in contrast to the lexicalized meaning ‘shell’.

One more case should be mentioned: °*ānaśi-* ‘reaching’ (*aś/amaś* ‘reach’) in *vyānaśi-* ‘reaching, penetrating’ (3pl.perf. *ānaśúr*). The paradigmatic differentiation of the root (see LIV²: 282f.: **h₂nek*) and its perfect stem in Vedic indicate that this must be a comparatively late formation. Kümmel (2000: 284ff.) posits two synchronic perfect stems, *ānaś-lāś-* (RV-YV) and *ānaś-lānaś-* (RV+). The latter prevails already in the Rīgveda and is presumably the younger formation. Since almost all of the other reduplicated *i*-stems are synchronically aligned with the weak stem of the corresponding perfect, we can safely assume that *vyānaśi-* is an inner-Vedic formation based on the weak stem of prevalent *ānaś-lānaś-*. The fact that it is attested with an accusative object implies that this syntactic behavior was perceived as a core property of the type, even for new formations:

RV 3.49.3ab: *sahāvā pṛtsú tarāṇir nārvā, vyānaśī ródasī mehánāvān*
Mighty in the fights like a traversing runner, **pervading**¹⁰ **both worlds**, full of generosity . . .

The other instances of reduplicated *i*-stems with participial behavior are *dādhi-* ‘placing, creating’ in RV 10.46.1c, *sāsni-* ‘winning’ (with both an accusative object and modification by the temporal adverb *divé-dive* ‘daily’ in RV 9.61.20), and *sāsri-* ‘running’, which takes a locative “argument” in RV 10.99.4ab *gósu* (. . .) *pradhanyāsu sāsriḥ* “running for the cows that constitute the prize.” Finite formations of the root *ṣṛ* also take locative arguments/adverbials, the syntagm meaning ‘running because of/for/in order to reach (sth.)’. As in the case of *jágmī-*, the locative is probably to be analyzed as an event-delimiting adverbial rather than a real argument, but it is instructive that the verbal adjective preserves the event structure of the verbal root it is derived from.

To summarize, of the Rīgvedic reduplicated *i*-stems roughly a third are attested with structural (i.e., accusative) objects and/or adverbial modifiers (see Table 2 in the appendix). These syntactic properties indicate that they are not agent nouns but deverbal nominalizations comparable in syntactic behavior to English “ACC-*ing*”¹¹ nominalizations and Vedic active participles. In the few cases where we find genitive rather than accusative objects, we are dealing with substantivizations of such formations—this holds, for example, for °*sāsahí-* ‘victor’ in RV 10.166.1a or *tūtuji-* ‘inciter’ in RV 10.22.3a. Note that in the majority of attestations, the

9. Renou (EVP 17: 20) apparently takes *nadyàḥ* to be a genitive singular (“bloqueur de la rivière”). I follow Grassmann (*WB*: 706f.) in which case *nadyò vavrīnā* is better translated as “(by) the one restraining the waters”; Geldner’s use of the genitive here suggests a substantival agent noun.

10. Renou (EVP 17: 89) translates *vyānaśī* as perfective, presumably based on the finite 3sg. perf. *vyānaśé* ‘has reached’ in RV 9.86.15b, which may well be the underlying syntagm of this form. However, RV 3.49.3 is concerned with generic qualities of Indra, for which the imperfective “durchdringend” of Geldner (*RV* I: 389) and Grassmann (*WB*: 1360) fits better.

11. I.e., gerunds with accusative objects, as in *baking the cake*, etc.

internal argument of the verb underlying the nominalizations remains unexpressed, so that in predicative use these cases are ambiguous between adjectival and substantival use.

§3. In this section I discuss the temporal and aspectual behavior of the *cākri*-type in comparison to the corresponding perfect stem. If there is a synchronic derivational link between the reduplicated *i*-stems and the weak stem of the perfect, one would expect the resulting nominalizations to have the same verbal semantics as the corresponding perfect stems. To be more precise, we expect them to be roughly equivalent to active perfect participles. In the following I will show that this only holds for a subset of the attested Rigvedic formations, which I will refer to as the “form-meaning match” type. On the other hand, there is a significant subgroup whose verbal semantics do not correspond to that of the associated perfect stem. I will call this group the “form-meaning mismatch” group. Finally, there are forms that do not formally correspond to a synchronic perfect stem or that are ambiguous.

§3.1 I will start by discussing the *cākri*-formations that correspond to what is expected of a perfect participle, i.e., the group in which there is a formal and functional correspondence between the two categories. These are the following:

(1) Form-meaning match

°ānaśi- ‘reaching’: 3pl.perf. *ānaśúr* ‘reach (up to), own sth.’ (pres.); ‘have reached sth.’ (perf.)

tāṭṛpi- ‘satisfying’: 3pl.perf *tāṭṛpur* (AVŚ) ‘are satisfied’, perf.ptcp. *tāṭṛpāṇá*- ‘satisfied’

tūtuji- ‘hurrying’: perf.ptcp. *tūtuajāná*- ‘hurrying’

dādhr̥ṣi-¹² ‘brave’: perf. stem *dadhṛṣ-* ‘be brave’, perf.ptcp. *dadhṛṣvāms-* ‘brave’

yúyudhi-/*lyúyudhi*- ‘pugnacious’: perf. stem *yuyudh-*/**yūyudh*-¹³ ‘are fighting’ (pres.), ‘have fought’ (perf.)

sásri- ‘running’: perf. stem *sasrur* ‘(have) run’, perf.ptcp. *sasṛvāms-* ‘having run; running’

sāsahí- ‘victorious’: perf. stem *sāsāh-* ‘be victorious’, *sāsahvāms-* ‘victorious’

Two more stems presumably also belong here: *°jajñi*- ‘knowing’ (on which see Oldenberg 1912: 274; EWA I: 599ff.; Tichy 1995: 280) and *vavri*- ‘cover’. The former is attested only once, in RV 10.71.9, in the nominative plural *áprajajñayah*, which supports the interpretation ‘ignorant, inexperienced’, thus from *jñā* ‘know’. However, later attestations of *jājñi*- seem to mean ‘sprout, grow’ (e.g., *jājñi bíjam* ‘(well)-sprouting seeds’, TS VII 5.20) and probably belong to *jan* ‘beget’ (Tichy 1995: 67). The obvious explanation is that we are dealing with two formally identical formations from two different roots, presumably not belonging to the same period (RV vs. TS), so AiG II,2: 292. The Rigvedic instance of *°jajñi*- corresponds exactly to the meaning of the perfect participle *jajñivāms-* in RV 3.2.11 (Kümmel 2000: 206).

In the case of *vavri*- the corresponding perfect participle has an imperfective, present-like meaning (cf. Kümmel 2000: 460f.) in the same contexts as *vavri*- in the Indra myth, e.g., RV 4.16.7a *apó vṛtrám vavrivāmsam párahan* “you beat away Vṛtra, who was obstructing the waters” (cf. RV 1.54.10 *nadyò vavriṇā* “(by) the one restraining/obstructing the rivers” cited above).

As is immediately clear from these forms, the cases in which the reduplicated *i*-stem has the same verbal semantics as the formally corresponding perfect stem are those in which the

12. The length of the reduplication syllable is assured by RV 2.16.7b which has *dādhr̥ṣiḥ* in the cadence of a Jagati verse. This could reflect the influence of the perfect stem allomorph with long reduplication (which, however, is not attested until the Atharvaveda; see Krisch 1996: 31 n. 64; Kümmel 2000: 271). However, since the trisyllabic *i*-stems clearly prefer the stem structure H(eavy) L(ight) (cf. *tāṭṛp-*, *sāsah-*, *tūtu-*, etc.; see §5.2 below), an original **dādhr̥ṣi*- could have been remodelled very early, independently of the corresponding perfect stem.

13. Kümmel 2000: 413.

perfect stem is actually used as a present stem—these are the so-called “stative perfects” (naktostativ in Kümmel’s terminology). In these cases, there is no reason to believe that the derivational basis was anything other than the synchronic perfect stem.

§3.2 There are furthermore a number of reduplicated *i*-adjectives whose verbal semantics are not the same as those of the formally corresponding perfect (participle); that is, the correspondence between the two categories is only formal. It is striking that these are usually also attested with structural case objects and adverbial modification, and a number of them are also found in Avestan (see below). This is also the class where the clearest instances of the iterative and intensive Aktionsart posited by Wackernagel (AiG II,2: 291) and Tichy (1995: 236ff.) are found.

Starting with *cákri-* ‘making’, this form usually characterizes an imperfective verbal action, often with habitual, durative, or iterative connotations, e.g., RV 9.88.4 (cited above) *mahā kármāṇi cākriḥ* “accomplishing great deeds” (something that Indra does habitually). Another clear instance of a repeated, habitual action is RV 6.24.5 also already mentioned above:

RV 6.24.5ab: *anyád adyá kárvaram anyád u śvó, ‘sac ca sán múhur ācakrír índraḥ*
One deed today and another one tomorrow; (thus) Indra instantly **turns that which is not into that which is**.

The object distributive use underlined by *anyád–anyád* makes it clear that repeated actions are involved: these are atelic with respect to the point of narration. Contrast with this the use of the perfect active participle of *kṛ*:

RV 6.17.13: *evā tá víśvā cakṛvāṃsam índram, mahám ugrám ajuryám sahodám/*
suvíram tvā svāyudhám suvájram, á bráhma návyam ávase vavṛtyāt
So möge dich, **der dies alles getan hat**, den großen, gewaltigen, alterlosen, siegverleihenden Indra,
dich, den Tapferen, mit schöner Waffe, mit schöner Keule, das neue Kraftlied zur Gunsterweisung herbringen.” (Geldner, *RV* II: 114)

The verses preceding this passage describe Indra’s heroic deeds, and the choice of the perfect participle (*tá víśvā cakṛvāṃsam*) expresses the completion of these deeds.

As Kümmel (2000: 137ff.) notes, the perfect of *kṛ* is one of the prime examples for *vergangenheitsbezogenen* use of the perfect stem (both in the indicative and the participle) and one of the best-attested resultative perfects in the Rígvēda. But neither the aspectual nor the Aktionsart behavior of the perfect stem of this root corresponds to that of *cákri-*, despite the superficial morphological equivalence.

The situation is similar for *jágmi-* ‘going’. In RV 2.23.11 (see above), Brahmanaspati is compared to a bull, with *jágmi-* describing a habitual activity of the bull, in coordination with the likewise habitual agent nominal *nīṣ-ṭaptar-* (see Tichy 1995: 245). Again, note the contrast with the synchronic perfect active participle:

RV 3.38.6cd: *ápaśyam átra mánasā jaganvān, vraté gandharvām ápi vāyúkeśān*
Ich sah, im Geiste **dorthin gegangen**, auch die Gandharven, deren Haare der Wind sind, in eurem Dienste. (Geldner, *RV* I: 380)

The perfect participle describes a completed action in contrast to the use of the imperfect in the main clause. Although Kümmel (2000: 155ff.) points out that the perfect of *gam* is often used as a naktostativ perfect (‘having arrived’ → ‘being there’), which is imperfective, the use of *jágmi-* with an accusative object does not correspond to this function either (‘going towards’ vs. ‘being at’). Iterative use of *jágmi-* occurs in the following passage:

RV 1.89.7ab: *pṛṣadaśvā marútaḥ pṛṣnimātarah, śubhaṃyāvāno vidátheṣu jágmayah*
 Die Marut mit scheckigen Rossen, die Söhne der Mutter Prisni, die prunkvoll ausfahrenden, **die gern zu den weisen Reden kommen**, . . . (Geldner, *RV I*: 114)

The plural locative goal requires a reading where the Maruts arrive repeatedly at different *vidáthas*.

jághni- ‘beating’ is used in RV 9.61.20 to designate an inherent characteristic trait of soma:

RV 9.61.20: *jághnir vṛtrám amitṛíyaṃ, sásnir vájam divé-dive/*
goṣá u aśvasá asi
Slaying the hostile **Vṛtra, winning the prize** day after day,
 you are the winner of cows and horses.

All three descriptive characteristics (slaying Vṛtra, winning prizes, winning cows and horses) are clearly generic properties of soma. The iterative-habitual semantics are strengthened by the adverbial phrase *divé-dive* and anchored in the present (. . . *asi*; see Tichy 1995: 240). This contrasts with the resultative, completive use of the synchronic perfect participle, an example of which is given in the following passage:

RV 4.18.7cd: *mámaidán putró mahatá vadhéna, vṛtrám jaghanvám asṛjad ví síndhūn*
 Mein Sohn hat diese Flüsse laufen lassen, nachdem er mit der großen Waffe **den Vritra erschlagen hatte**. (Geldner, *RV I*: 442)

The perfect participle is again perfective with respect to the verbal action of the main clause.

In RV 6.23.4 (see above), the three reduplicated *i*-stems in *babhrír vájram papíḥ sómaṃ dadír gāḥ* characterize habitual actions performed by Indra. As Tichy (1995: 237) points out, the reduplicated *i*-stems in this passage display the same syntactic behavior and are used in similar contexts as the root-accented agent nouns in *-tar-* (e.g., *dātar-* ‘(habitual) giver, donor’, etc.), which, according to her analysis, are likewise used to designate the agents of repeated, habitual actions. The perfect participles of *pā* ‘drink’ and *bhṛ* ‘carry’, on the other hand, have different semantics (for *dā* see below). The perfect indicative of *pā* is always resultative (Kümmel 2000: 308f.); the participle always designates a perfective action, as in RV 2.11.10 where the completion of the soma-drinking (*papivān sutásya*) is a precondition for the verbal action of the main clause:

RV 2.11.10cd: *ní māyíno dānavásya māyá, ápādayat papivān sutásya*
 Er brachte die Zaubereien des zauberischen Danava zu Fall, nachdem er Soma **getrunken hatte**.
 (Geldner, *RV I*: 288)

The same holds for the perfect stem of *bhṛ* (Kümmel 2000: 338ff.). Only the perfect middle participle is attested in the Rigveda, but again we see an opposition to the habitual, imperfective semantics of *babhrí-*:

RV 3.1.8ab: *babhrānāḥ sūno sahaso vy ādyaud, dādānāḥ śukrá rabhasā vāpūṃṣi*
Ausgetragen bist du Sohn der Kraft aufgeleuchtet, lichte, grelle Farbenpracht annehmend.
 (Geldner, *RV I*: 333)

The perfect participle designates an action that is completed by the time of the action of the main clause (*vy ādyaut*).

Like *jágmi-*, *yayí-* ‘going, hurrying’ (*yā* ‘drive, move’) formally belongs to a resultative perfect (Kümmel 2000: 409). The finite forms mean ‘to have driven, gone (up to) somewhere’. Contrasting with this is the imperfective, durative use of *yayí-*:

RV 5.73.7ab: *ugró vām kakuḥó yayíḥ, śṛṇvé yāmeṣu samtanīḥ*
 Your strong draft horse **is moving**; its clatter is heard on the tracks.

The use of the present middle *śṛṇvé* indicates that the movement is ongoing at the time the noise is heard (*śṛṇvé . . . samtanīḥ*). The perfect participle *yayivāms-* is attested only once in a difficult passage (RV 9.15.6, see Oldenberg 1912: 157f.), where it seems to have the same resultative sense as the finite stem (*yayivāṁ āti* “having gone through”).

A less certain example might be provided by *vīvici-* ‘distinguishing’ (*vic*¹⁴ ‘separate, sieve, shake’), attested twice (RV 5.8.3 and 8.50.6). The corresponding perfect stem is attested only once in the Rigveda, in the nominative singular of the perfect participle *vivikvāms-* in RV 3.57.1, where it is used as a resultative (‘having chosen’, Kümmel 2000: 496). In RV 8.50.6, on the other hand, *vīvici-* is used to describe a general, habitual characteristic of Indra and does not correspond to the use of the perfect participle.

RV 8.50.6ab: *prá virám ugrám vīviciṁ dhanasp̄taṁ, vibhūtiṁ rādhaso mahāḥ*

Den gewaltigen, **wählerischen** Helden, den Schätzegewinner, der großer Gabe mächtig ist, (lobe ich). (Geldner, RV II: 372)

Since there are very few examples it is difficult to draw any conclusions about the semantic relationship between the participle and the *i*-stem, but the two could potentially instantiate another case of a form-meaning mismatch.

In the case of *sásni-* ‘winning’ (*san* ‘win’), one passage favoring a durative, iterative reading has already been given (RV 9.61.20). An iterative interpretation is also suggested by the following passage, in which Indra and Agni are described as *sásnī* with respect to different prizes (*vājeṣu*) and sacrificial actions (*kármasu*), implying repeated actions:

RV 8.38.1: *yajñásya hí sthá ṛtvījā, sásnī vājeṣu kármasu/
índrāgnī tásya bodhatam*

You two are the priests of the sacrifice, repeatedly **winning** (with respect to) the prizes and the actions (of the sacrifice).

Be mindful of this, Indra and Agni!

In the passages where *sásni-* designates the habitual winner, its use is somewhat closer to the use of the synchronic perfect participle *sasavāms-*, which usually means ‘having won’, hence ‘victorious one, winner’ (Kümmel 2000: 551ff.). But even in cases in which the meaning of *sasavāms-* is close to that of the stative perfect participle *sāsahvāms-* ‘victorious’, it is still different from *sásni-* ‘repeatedly winning’ above.

Summing up, the stems discussed in this section do not correspond to their synchronic perfect stem in their verbal semantics. The differences between the (non-finite) perfect and the corresponding *i*-adjective are summarized in the following table:

(2) Resultative perfects and reduplicated *i*-stems

	Perfect participle	Reduplicated <i>i</i> -stem
Aspect	perfective	imperfective
Tense	past, sometimes present	present
Aktionsart	unmarked	iterative, durative, habitual, sometimes intensive

14. See Oldenberg 1909: 318, but *vyac* (Grassman, *WB*: 1293) cannot be completely excluded. The latter has the occasional reduplicated present forms based on the stative perfect stem already in the Rigveda (e.g., 3du.pres. *viviktás*, etc.; see Kümmel 2000: 509ff.), which could have provided the derivational basis—in that case we are not dealing with a “mismatch” form.

§3.3 There are a number of reduplicated *i*-stems for which no synchronic perfect stem is attested or which have a reduplicated verbal stem different from the perfect as their derivational basis; that is, there is no formal correspondence between the two categories. This holds for °*cācali*- ‘swaying, staggering’, in *āvicācali*- ‘not swaying’, e.g., RV 10.173.1 *dhruvās tiṣṭhāvicācaliḥ* “stand firm without swaying!” (the second Rigvedic attestation is in 10.173.2), made from the root *cal*, a variant of *car* ‘move’. There is no perfect attested for this root, and both its phonological make-up and its occurrence within the Rigveda (twice in the tenth book) point to a relatively late formation (cf. §5.2 below on the long-vowel reduplicated *i*-stems). The first two verses of the hymn, which contain the two attestations of *āvicācali*-, are paralleled by AV 6.87.

jāguri- in RV 10.108.1b *dūré hy ādhvā jāguriḥ parācāṭh*, which Geldner translates as “Der Weg so weit in die Ferne ist ja aufreibend,” may be derived from the root **g̃* ‘be/make heavy, tired’ (< **g^uerh₂*, the root of Ved. *grāvan*- ‘stone’), *g̃* ‘devour’ (Renou, EVP 16: 161), or may even belong to *glāyati* ‘is exhausted’ (Werba 1997: 403; KEWA III: 699), which also has the right root shape (*glā* < **g^ul(-)eH* vel sim.). In either case, there is no synchronic reduplicated verbal formation attested for either **g̃* or *glā* (the latter has a post-Vedic perfect) that could be suspected as a derivational basis. On the other hand, *gr̥* ‘devour’ (< PIE **g^uerh₃*) has a Vedic perfect *jagāra*; a pre-Indic formation **ja-gr̥H-i*- formally based on this stem would indeed give *jāguri*-. *ādhvā jāguriḥ* would then have to be translated as “devouring path” and would be another instance of a form-meaning mismatch between the *i*-stem and the perfect stem, which is always resultative (Kümmel 2000: 162f.).¹⁵ The root *j̥* ‘grow old’ favored by Oldenberg (1912: 331) can be excluded on formal and semantic grounds.

For *jāghri*- ‘dripping, splashing’ (*ghr̥* ‘drip’, see Grassmann, *WB*: 464; Geldner, *RV I*: 223f.) there is no perfect stem attested in the Rigveda and the reduplicated present *jīgharti* does not formally correspond to the *i*-stem (for a possible cognate in Avestan see below). The form is a hapax in the Rigveda, attested only in RV 1.162.15a *mókhā bhrājanty abhī vikta jāghriḥ* “may the glowing dripping pot not fall over.” Renou (EVP 16: 86) suggests a connection with the root of *gharmā*- ‘heat’; both ‘sprinkling, dripping’ and ‘becoming hot’ would be fitting modifiers of the pot in this passage. Both roots are *aniṭ*, so there is no easy way to decide between them based on this passage alone.¹⁶

In the case of *tāturi*- ‘conquering, victorious’ (*t̥* ‘conquer, cross (over), overcome’), the *i*-stem does not formally correspond to the attested perfect *tatāra/titirus*; it looks like an old formation with the expected development of an Indo-Iranian laryngeal, as if from **tā-t̥H-V* (**terh₂*, cf. EWA I: 629ff.), cf. *pāpuri*- and *jāguri*-. That the etymological connection with *t̥* was still clear is shown by RV 6.68.7d *prā sadyó dyumnā tirāte tāturiḥ* “augmenting (its) radiance instantly (as one who is) conquering” (cf. Renou, EVP 5: 98; 7: 80). The semantics of the perfect participle and the reduplicated *i*-stem, attested five times in the Rigveda (always without expression of its internal argument), partly overlap: *titirvāms-* is used in the vocative meaning ‘(habitual) conqueror’, like *tāturi*- in RV 4.39.2, 6.22.2, and 6.24.2. However, the perfect participle is usually completive-resultative (Kümmel 2000: 214), which *tāturi*- never is. This form could therefore be interpreted as belonging to the form-meaning mismatch group, albeit without the formal correspondence to the synchronic perfect stem.

15. I am grateful to Stephanie Jamison for bringing this possibility to my attention.

16. Collapsing these roots (as hinted at by Whitney 1885: 43) is implicitly rejected by EWA I: 512f. and LIV²: 197; 219f. The connection with *ghrā* ‘smell’ (cf. Geldner, *RV I*: 223 n. 15b) can be excluded on formal grounds (expected **jāghuri*-), but more securely on semantic grounds (*ghrā* and its Indo-European relatives are always transitive, see LIV²: 221).

There is no synchronic perfect attested for the root of *yūyuvī-* ‘keeping away, restraining sth./sbdy.’ (*yu* ‘separate, keep away, restrain’), but there is evidence that the reduplicated present *yuyoti* actually continues an older perfect stem *yayáv-* → *yuyáv-* (Jamison 1983a: 174f.; Kümmel 2000: 401ff.) from which the *i*-stem may have been derived. On the other hand, the stem seen in the 3sg.inj. *vīyūyot* is equally likely to have provided the derivational basis. This form is usually analyzed as a causative aorist (e.g., Hoffmann 1967: 90), but it is unclear whether this was the synchronic function of the stem (Kümmel 2000: 404). At any rate, the figura etymologica in the following passage shows that *yūyuvī-* was interpreted as derivationally related to *yu*:

RV 5.50.3cd *ārē vīśvam patheṣṭhām, diviṣo yuyotu yūyuvih*

Let **the expeller** expel everyone who is standing in the way, the enemies, far from here!¹⁷

There is also no clear derivational basis for *vāvahi-* ‘moving quickly’ (*vah* ‘go, drive/draw^{need j} a wagon, lead’) in the Rigveda. The corresponding perfect stem has undergone substantial^{with an} remodelling (*uvāha/ūhūr*), but the form was clearly not derived from the expected outcome^{acute} of the perfect stem (**ṽa-ṽāj^h-/ṽa-ṽj^h-*) either. Moreover, the synchronic perfect is always completive-resultative (Kümmel 2000: 490), whereas *vāvahi-* is imperfective, possibly with intensive connotations:

RV 9.9.6ab: *abhī vāhnir āmartyaḥ, sapṭā paśyati vāvahiḥ*

Das unsterbliche Wagenroß überschaut **raschfahrend** die sieben Ströme. (Geldner, *RV* III: 16)

Structurally and semantically, *vāvahi-* resembles a “type I” intensive stem (see Schaefer 1994: 25) like *pāpaj-* ‘become solid, stand still’, *nānad-* ‘roar’, etc., which is undoubtedly what influenced Geldner’s translation of the word. The form is most likely based on other *cākri*-formations with a long reduplication syllable (*sāsahī-*, etc.). I will return to these below.

The hapax *śīśvi-* ‘growing’ (*śū* ‘swell, grow (strong)’) is attested in the compound *sūśīśvi-* ‘growing well’ (RV 1.65.4). The corresponding perfect stem differs formally (3pl. *śūśuvur*, participle *śūśuvāms-*) and semantically from the *i*-stem in that the perfect is used as a stative present (‘be strong’) while *śīśvi-* is durative and telic. The *i*-reduplication and the unexpected weak stem allomorph *-śv-* make it likely that the derivational basis of this form was the *u*-stem *śīśu-* ‘child’ (< ‘growing (one)’), which is itself morphologically problematic (EWA II: 641).

The root of *sūśvi-* ‘pressing (soma)’ (*su* ‘press’) makes a perfect *suśāva*, 3pl. *suśuvūr*. The 3pl. *suśvati* in RV 2.16.5 indicates that the use of this stem as a stative perfect led to the (later regular) remodelling of the “present” perfect to a reduplicated present (Kümmel 2000: 557). Formally, the latter might be the derivational basis of *sūśvi-*. Both the active participle *suśuvāms-* and the middle participle *suśvāṇā-* are used in a resultative sense, which can become stative in the meaning ‘having pressed soma (and now keeping it ready)’ (Kümmel, *ibid.*). On the other hand, *sūśvi-* designates someone who habitually presses soma. This is particularly clear in RV 4.25.7 where *sūśvi-* is opposed to the (negated) present participle of *su-*, *sunvānt-*:

RV 4.25.7: *nā revātā paṇṇā sakhyām indró, ‘sunvatā sutapāḥ samḥ grṇitel*
āśya védaḥ khidāti hānti nagnām, ví sūśvaye paktāye kévalo bhūt

Indra schließt keine Freundschaft mit dem reichen Knauser, **der keinen Soma auspreßt**, er der Somatrinker.

17. See Renou, *EVP* 5: 30.

Er zwackt ihm die Habe ab, erschlägt ihn splitternackt. Einzig **für den Somapressenden**, für den Kochenden¹⁸ ist er zu haben. (Geldner, RV I: 453)

This use is easily understandable if the remodelled “present” *suṣvati* was the derivational basis of the *i*-stem.

§3.4 Finally, there are two cases in which either the perfect stem or a reduplicated present stem could formally be the derivational basis of the attested *i*-stem, making these formations ambiguous: *dadí-* ‘giving’ (*dā* ‘give’) could formally belong to either the present *dádāti*, 3pl. *dádāti*, or to the perfect *dadáu*, 3pl. *dadúr*. Kümmel (2000: 240ff.) points out that the perfect is resultative-completive, but also that the perfect participle *dadvāms-* has become lexicalized in the meaning ‘donor’, which is also the use of *dadí-* in a number of instances (RV 1.15.10, 1.110.7, 2.37.2, 8.21.6, etc.). In other cases, repeated actions at the point of narration are implied, e.g.:

RV 1.81.7ab: *máde-made hí no dadír, yūthā gávām ḡjukrátuh*

During every intoxication the right-minded one gives us herds of cows.

The adverb *máde-made* underlines that these are repeated single actions, a feature that does not square well with the use of the perfect stem. However, *dadí-* is equally likely to have been derived from the reduplicated present stem and therefore does not necessarily represent a form-meaning mismatch.

As in the case of *dadí-*, the root of *dádhi-* ‘placing’ (*dhā*) also makes both a reduplicated present (*dádhi-*, 3pl. *dádhati*) and a perfect (*dadháu*, 3pl. *dadhúr*). The perfect is always resultative-completive (Kümmel 2000: 270), but the active participle is not attested in the Vedas. The accent of *dádhi-* might be interpreted as pointing to the present stem, but since the core forms of the reduplicated *i*-stems are barytone (*cákri-*, *jágmi-*, *jághni-*, etc.) this is not necessarily a strong argument for a present-stem derivative.

§3.5 To sum up this survey of the Vedic material, we have seen that there is a core set of forms that take structural accusative case objects or adverbial “objects” and are modified by adverbs (for a summary of the syntactic properties see Table 2 in the appendix). This means that this nominalization type is at least synchronically not a “real” agent nominalization. Agent nominals typically do not assign structural case and can only be modified by adjectives. Syntactically, the type patterns instead with deverbal participles and so-called “mixed nominalizations” of the English ACC-ing gerund type, which can assign structural case, combine with overt tense and aspect marking, and be modified by adverbs.¹⁹ The *cákri-* formations differ from other Vedic participles, however, in that they are not integrated into the averbo of a particular tense-aspect stem, a point that will be taken up below.

Concerning the semantics of the type, I have argued that there is a subgroup of forms that are *formally* associated with the weak stem of the perfect, but do not behave *functionally* like a participial formation of the synchronic perfect stem. This is the group discussed in §3.2, where I argued that the reduplicated *i*-stem has imperfective, present-tense-like meaning and that its Aktionsart is iterative (e.g., RV 6.24.5, 9.61.20, 1.81.7), durative (e.g., RV 5.73.7), or habitual (e.g., RV 4.25.7, 6.23.4, 9.88.4), as opposed to the corresponding perfect participle, which is resultative-completive with respect to aspect and unmarked for Aktionsart. Instances of intensive meaning (AiG II,2: 291) are arguably found in derivatives of verbs

18. Better with Oldenberg (1909: 290) “für Kochopfer.”

19. See Baker and Vinokurova 2009 and Alexiadou and Rathert 2010 on the typology of “mixed nominalizations.”

of motion, e.g., *jágmī-* in RV 2.23.11, *yayí-* in RV 5.37.7, *tútuji-* in RV 10.35.6 (see Tichy 1995: 241), etc.

Note that instances of iterative and/or habitual use are also found for some of the *i*-stems that formally correspond to stative perfects or arguably not to perfect stems at all, as discussed above. I quote the following example and translation from Tichy (1995: 240f.):

RV 8.46.15: *dadī rékñas tanvè dadír vásu, dadír vájēṣu puruhūta vājínaml
nūnám átha*

Du Vielgerufener, **der immer wieder** unserem Leib Besitztum **schenkt, der immer wieder Gut schenkt, der** in den Wettrennen **immer wieder** ein sieggewohntes (Rennpferd) **schenkt**— auch jetzt.

The temporal adverbial phrase *nūnám átha* emphasizes that these repeated actions extend to the speaker's present. Such instances confirm that this type was perceived as marked for a special Aktionsart—iterative, habitual, or intensive—independently of the semantics of the formally corresponding perfect stem.

In the next section, I will discuss the Avestan forms corresponding to the Vedic reduplicated *i*-stems.

§4. Although the *cákri*-type is much more sparsely attested in Avestan, it displays the core features that have now been established for its Vedic equivalent. The exact cognate of Ved. *cákri-* is the OAv. hapax *caxri-* (cf. YAv. 3pl.perf. *cāxrarə*). It is attested in a somewhat difficult passage:

Y.34.7: *kuθrā tōi arədrā mazdā yōi vañhəuš vaēdənā manəñhō
səñghūš raēxənā aspəncīṭ sādrcācīṭ caxraiiō ušəurū*

Most translations (Bartholomae AIW: 576; Insler 1975: 223; Humbach 1991: I: 141; Kellens-Pirart 1991: III: 117) agree that *caxri* governs a double accusative in this passage, i.e., “turn/make X into Y,” with different interpretations of the constituencies of X and Y. Skjaervø (2002: 52 n. 73), on the other hand, takes only *səñghūš* to be the direct object of *caxraiiō*: “Where are those heavenly arbiters, o Mazda, who by the possession of good thought, / ever and again make (*caxraiiō*) the ‘statements’ / censures(?) (*səñghūš*): ‘(These) *pittances (*raēxənā*) are non-life-giving indeed (*aspəncīṭ*), grievous indeed (*sādrcācīṭ*).’” If Skjaervø is correct, the passage does not provide a double accusative parallel with Vedic. It does, however, parallel Vedic *cákri-* in that it takes an accusative object (*səñghūš*), comparable to the use of *cákri-* in, e.g., RV 9.88.4a *mahā kármāṇi cákriṭ* “(repeatedly) performing great deeds” or RV 3.16.4a *cákriṭ yó víśvā bhúvanā* “who (constantly) makes/creates all beings.” We can therefore conclude that the adjectival use of *cákri-/caxri-*, reminiscent of that of an (iterative/intensive) imperfective participle which can assign structural case, is inherited from Proto-Indo-Iranian.

The superlative *vijaγmišta-* ‘going in all directions the most’ presupposes a **jaγmi-* cognate with Ved. *jágmī-* and formally corresponds to the synchronic perfect stem seen in the 1sg. perfect optative *jaγmīyam* and the feminine perfect participle *jaγmūṣī-*. It is attested with an accusative object in Yt.1.2 and Yt.1.4 (*taṭ* instead of *kaṭ* in Yt.1.4).

Yt.1.4: *taṭ vīspahe aṅhəuš astuuatō mana asti vijaγmištəm*

. . . this [=Ahura Mazda's name] is what out of the whole material world **spreads out most** to the thoughts.²⁰

20. This translation is based on Bartholomae's emendation of *mana* to *+manō* (AIW: 1438); cf. also Wolff's translation (1910). According to Geldner's edition (1886–96), however, there is no variation in the manuscripts that

A similarly built superlative is the Young Avestan form *jaγništa-* ‘who slays most’, attested in Yt.11.3, Yt.12.7, 8, and Y.71.7 (always with an accusative object), which presupposes a **jaγmi-* cognate with Ved. *jághni-*:

Yt.11.3: *sraoṣō ašiiō driγīm θrātō.təmō hō vərəθraja drujam jaγništō*

It is the rewarding Sraoša who best protects the poor one, who, overcoming obstacles, **beats down the Lie the most.**

Yt.12.7: *rašnuuō tāiiūm nijajništa*

O Rašnu, **best smiter of the thief!** (or, most often smiting the thief)

In all three passages we have a Vedic-Avestan parallel in the use of this type with an accusative object, as well as a parallel in the preverb selection between Av. *nijajništa-*: Ved. *nijaghní-* (cf. RV 9.53.2 above).

As an anonymous reviewer has pointed out, there is an alternative analysis of °*jaγmišta-* and *jaγništa-* as superlatives of athematic stems derived from reduplicated verbal formations, presupposing a segmentation °*jaγm-išta-* and *jaγn-išta-*. Superlatives to verbal roots are abundant in Vedic (e.g., *yájiṣṭha-* ‘who sacrifices most’, *mádiṣṭha-* ‘most intoxicating’, *gámiṣṭha-* ‘who arrives most (as a helper)’, etc.) and Avestan (e.g., *bairišta-* ‘who carries the most’, *vaēdišta-* ‘who knows the most’, etc.) and are occasionally found in other Indo-European languages as well, e.g., Greek φέριστος ‘best’ (= Av. *bairišta-*; φέρω ‘bring’). Furthermore, we occasionally find such formations built to morphologically characterized tense-aspect stems, e.g., Ved. *párṣiṣṭha-* ‘best at helping across’ (*s*-aorist of *pr*), YAv. *yūidišta-* ‘best at fighting’ (pres.st. *yūidiia-*), *dārišta-* ‘best at supporting’ (pres.st. *dāraiaa-*); cf. AiG II,2: 446f., AIW: 739. However, these are few and relatively young formations, whose synchronic derivational basis is clear. For a segmentation °*jaγm-išta-* and *jaγn-išta-* to be credible, we would expect also to find the corresponding Indo-Iranian (athematic?) reduplicated verbal stems **ja-gm-* and **ja-ghn-*. Indo-Iranian **gam* ‘go’ made no reduplicated verbal stem other than the perfect,²¹ and the same holds for its Proto-Indo-European ancestor **g^hem*, judging from the evidence from the other branches (cf. LIV²: 209f.). This means that in this case the existence of the parallel Vedic formation *jághmi-* makes the assumption of an inherited Indo-Iranian reduplicated **i*-stem much less costly. That the superlative of such a stem would end in IIr. **-išta-* is trivial. Note that this superlative furthermore contrasts with the superlative of the synchronic perfect participle, for example in Yt.11.9 *yō ašahe jaγmūštəmō* ‘who has best reached order,’ where the allomorph *-təma-* rather than *-išta-* is selected (as expected), quite apart from the by now familiar semantic difference between °*jaγm-išta-* and *jaγmūš-təma-*. In this case, assuming a nominal base **jaγmi-* seems much less problematic than assuming a reduplicated verbal stem **jaγm-* distinct from the perfect.

As for *jaγn-išta-*, Avestan actually does have a synchronic verbal stem *jaγn-* distinct from the perfect. This is attested twice, in Yt.13.45 (*ni.jagnənte*) and Yt.13.105 (*auua.jagnaṭ*). I follow García Ramón (1998) in assuming that °*jaγnaṭ* forms an equation with Greek πρηνε/o- and continues an inherited reduplicated aorist. The present °*jaγnənte* is a back-formation to this, and the same probably holds for the Vedic reduplicated present *jághnate*. As García Ramón shows, the stem (PIIr.) **ja-g^hn-* had iterative-intensive semantics at least in Iranian, and it is conceivable that in this case the derivational basis of *ni.jajništa-* was the reduplicated verbal stem in the syntagm *ni.jaγn-* of Yt.13.45 rather than a nominal stem (PIr.) **jaγmi-*. However, the fact that we have already established the equations Ved. *cákri-*:

could support such an emendation. The reading *mana* ‘my’, on the other hand, poses problems for the translation. I have therefore decided to follow Bartholomae.

21. The synchronic intensive stem *gánigam-* and the late reduplicated aorist *jīgamat* can hardly be relevant here.

Av. *caxri-* and Ved. *jágmī-*: Av. **jāyṃi-* makes a **jāyṃi-* besides Ved. *jághni-* very likely, and this is also how Hoffmann (1956: 15 = 1976: 396) interprets these superlatives. Besides, a thematic base would have been more likely to select the allomorph *-təma-*.²² I therefore conclude that Ved. *jághni-*: Av. **jāyṃi-* in all likelihood constitute another word equation.

Young Avestan probably had a stem *°jāyri-* in the hapax *spən.jāyrim* (name of a demon) in V.19.40. It is tempting to analyze the name as a verbal governing compound with a root noun *spən-* (cf. *spənta-* ‘life-giving, prosperous’) as the first compound member and a second compound member cognate with Ved. *jághri-* ‘sprinkling’. This is the analysis of Humbach (1959: II: 64 and 1991: II: 172, followed by Kellens 1974: 154), who translates the name as ‘spattering prosperity’. The Daēuua in question is therefore thought to be “destroying prosperity by scattering water.” While a stem **jāyriia-* is theoretically also possible, it is highly unlikely that such a stem would occur as the second compound member in this kind of compound. Proto-Indo-European **-i̯o-* is well attested in second compound members of so-called derivational compounds (“Risch-compounds”) made from nominal and prepositional phrases, e.g., Ved. *dása-māsyā-* ‘ten-monthly’, Gk. *ὁμο-γάστριος* ‘from the same womb’, *εἰνάλιος* ‘in the sea’, etc. (cf. AiG III: 106ff., Malzahn 2010). On the other hand, if *°jāyrim* is indeed derived from the Proto-Indo-Iranian root **ghar* ‘drip, sprinkle’, we are dealing here with a verbal governing compound. In Vedic, *-ya-* is furthermore highly productive as a gerundive suffix, but formations to morphologically characterized verbal stems are rare (AiG II,2: 794f., e.g., Ved. *carkṛtya-* ‘to be praised’). While a (transitive and intransitive) present-participle-like use of *ya-* formations is possible in Vedic (AiG II,2: 801f.), it is rarer than the default gerundive meaning (‘to be *x*-ed’), and the same seems to be true in Avestan (cf. Av. *°kairiia-* ‘to be done’, *karšīia-* ‘to be plowed’, *išīia-* ‘to be desired’, etc.). That a compound with an Iir. **ya-* stem as its second compound member would have the verbal governing compound-like meaning ‘spattering prosperity’ is highly unlikely. It seems that we can therefore posit a stem **jāyri-* for Avestan, cognate with Vedic *jághri-*, based on what we know about Indo-European compound formation.

In V.18.65 we find the compound *azrō.daiḍim*, the second compound member of which could in principle be cognate with Ved. *dádhi-*:

V.18.65: *jaθβō.tara . . . yaθa vā vāhrqam azrō.daiḍim gaēθqam auui frapataiti*

More deserving to be killed . . . than the she-wolf **who gives chase** and attacks the herd.

Bartholomae (AIW: 229) equates the second compound member with Ved. *dádhi-* (*dhā*), but *dā* is in principle equally possible. As for the first compound member, he suggests a comparison with Gk. *ἄγρα* ‘hunt’ (Gk. *ἄγω*, Av. *az-*) and translates the compound as “Jagd machend, auf Jagdbeute, Raub ausgehend,” fitting the description of the she-wolf in this passage. However, a first compound member Av. *azra-*: Ved. *ájra-* ‘open fields’ would also work (thus Geldner 1882: 51f.; Mayrhofer 1985: 167). As for the second compound member, Tremblay (1998: 114), following Mayrhofer (ibid.), points out the possibility of a reduplicated formation of the root **dā* ‘trace, track down’ posited by Narten (1963). This would make the wolf ‘the one roaming the open fields’, an equally fitting epithet. Thus *°daiḍi-* may well be a reduplicated *i-* adjective to an Iranian root **dā*, but it seems impossible to decide which one is correct.

22. Cf. AiG II,2: 596f. for Vedic, but this can obviously not be predicted with absolute certainty since the distribution of *-tama-/təma-* and *-iṣṭha-/iṣṭa-* was beginning to fluctuate.

The Young Avestan nom.pl. *dādaraiō* belongs to *dar* ‘hold, sustain’, reflecting an older **dā-d(h)r-ilaj-* with subsequent *a*-epenthesis in the second syllable.²³ It is attested twice in N.96:

N.96 (2): *yezi aspərənō vastrahe aiβiiāstəm dādaraiō . . .*

If they **possess** a full set of clothes (to wear with) the sacred girdle . . .²⁴

N. 96 (3): *yezi āač aspərənō vastrahe *aiβiiāstəm dādaraiō . . .*

But if they do not **have** a full set of clothes (to wear with) the sacred girdle . . .

It is easy to see how the meaning ‘owners, possessors’ could develop out of a participial formation meaning ‘(habitually, constantly) holding’. The text is not very reliable, but if this interpretation is correct, this form could provide an interesting counterpart to Ved. *dādhr̥vi-* ‘firm, supporting’ formed from the same Indo-Iranian root **dhar*. While *dād(a)ri-* has the imperfective, iterative semantics often associated with reduplicated *i*-stems (from which the habitual agent meaning could easily develop), Ved. *dādhr̥vi-* with its stative semantics is more firmly embedded in the perfect system of the same root, virtually supplanting the perfect active participle in *-vāms-/uṣ-*. This case can be compared to Av. *jaγāurū-/Ved. jāgr̥vi-*²⁵ ‘awake, vigilant’ (perf. *jāgāra* ‘is awake’), where the semantics of the “*u*-*i*-participle” clearly indicate its derivation from the perfect stem, and Ved. *dīdivi-* ‘shining’ (*dī*), where the corresponding perfect also has the semantics of a stative present. The pair Av. *dādaraiō* vs. Ved. *dādhr̥vi-*, in which only the latter corresponds semantically to the synchronic perfect stem, confirms the intuition that the derivational basis of the reduplicated *i*-adjectives was *not* the synchronic perfect stem.

OAv. *mānarōiš*, genitive singular of a stem *mānari-*, probably reflects a dissimilated **mā-mri-*, but the passage in which it is attested is problematic:

Y.48.10: *kadā mazdā mānarōiš narō vīsəntē*

When, o Wise One, will (some) honorable persons take up their positions side by side with the **reciter**? (Humbach 1991: I: 178)

Humbach (1991: II: 203) interprets the form as derived from *mar-* ‘remember’, thus ‘the one who constantly remembers, memorizes’.²⁶ Narten (1986: 277) points out that a derivation from *mar-* ‘die’ is equally possible, in which case the passage would have to be translated “When . . . will the heroes take up position at the side of the mortal?” In that case we would have one more Vedic-Avestan *cākri*-type word equation, since AV 8.2.26 has *á-mamri-* ‘immortal’ (contrast resultative *mamrvāms-* ‘having died’ (RV+); see Hopkins 1893: 28).

Avestan also preserves a cognate of Ved. *vavr̥i-* in its older meaning ‘(constantly) covering’ in YAv. *°vaoiri-* ‘skin, covering’, attested in the genitive plural *haṃ.vaoirinam* ‘with skin/cream’ (said of milk) and *us.vaoirinam* ‘without skin/cream’ in V.5.52. The passage gives instructions for the treatment of women after a stillbirth, including types of milk (*paīiaḥ-*) they are allowed to drink. If *°vaoiri-* is indeed to be derived from *var* ‘cover’, the

23. Whether the length of the reduplicated syllable is original (or real, for that matter) is difficult to decide (see Kellens 1984: 407f. for a discussion of the problem), but the comparison with Vedic (*dādhr̥vi-*, 3sg.perf.act. *dādhr̥a* vs. mid. *dadhré*, etc.) suggests that both long- and short-vowel reduplication was available. Avestan itself has both a 3sg.act. *daōāra* (YAv.) and a 3sg.mid. *dādrē* (OAv.).

24. This and the following translation are from Kotwal and Kreyenbroek 2009: 53.

25. Ir. **-u-*, **-i-*, and the composite suffix **-u-i-* were used to form verbal adjectives to (morphologically) characterized verbal stems. See Rau 1998 for a discussion of this association.

26. Cf. also Skjærvø 2002: 52 n. 72: ‘*blamer (*‘memorizer?’)’. The translation ‘blamer’ is based on a segmentation **mām-ri-* and comparison with Gk. μῶμος ‘reproach, blame’.

context would support a meaning '(milk) covering' → 'milk skin' (thus EWA II: 513 and Tremblay 1998: 114, following Bartholomae 1896: 260).

P 45 contains the form *afrauuuociš* 'not proclaiming' < **a-fra-ua-ūč-i-*, where *°uuuoci-* could reflect a reduplicated *i*-stem to the root *vac* 'speak'.²⁷ This corresponds to the weak stem of the perfect attested in the OAv. 1pl. *vaoxəmā*, YAv. 3sg.act. *vauuaca*, mid. *vaoce*, whose use at least in Old Avestan was almost present-like (Kümmel 2000: 659). Note that the *i*-stem corresponds to the syntagm *fra+vac* 'speak forth; proclaim' attested elsewhere, e.g., Y.65.9 *frāuuuauuaca* 'has proclaimed', Y.19.11 *frāuuuaoce* 'has been proclaimed', etc. This formation would then correspond to the Vedic formations discussed in §3.2, in which the reduplicated *i*-stem corresponds both formally and semantically to the attested synchronic perfect stem.

The form *duδuβi°* in the compound *duδuβi.buzda* (FO.25a) 'causing panic' vel sim. could reflect a reduplicated *i*-adjective in its first compound member. Tremblay (1998) suggests a connection with the root of Goth. *daufs* 'deaf' and Gk. *τύφω* '(create) smoke' and hence a perfect **duδaοβa* as the derivational basis of the Avestan form. However, this root is not otherwise attested in Indo-Iranian and the perfect stem is purely conjectural. This makes *duδuβi°* a very uncertain, though not completely impossible, (inner-Iranian) instance of a reduplicated *i*-adjective.

There is one more possible Avestan example, namely the Young Avestan genitive plural *a-irīricinąm* 'not leaving behind':

Y.65.7: *yō nō airīricinąm irīrixšāite gaēθanąm*

... who wishes to abandon the herds of us **who are not abandoning**. (cf. AIW: 190)

The second instance (also in Y.65.7) has *tanunąm* 'bodies' (gen.) instead of *gaēθanąm*. As for *°irīrici-*, the context suggests a reduplicated formation of the root *iric* (*raēk*) 'leave behind, abandon' (← (pre-)PIIr. **li-lik^hi-*). In both instances, the form is associated with the synchronic desiderative stem *irīrixš-* (← **li-lik^h-sa-*), but this cannot be the derivational basis because of the missing desiderative suffix in the *i*-adjective. Even though the perfect stem corresponding to the Ved. 3sg.perf. *rireca* 'has left' (3sg.opt. *riricyāt*) is unattested in Avestan, it presumably underlies this formation. This means that *°irīrici-* could be a Proto-Indo-Iranian or inner-Iranian instance of this type.

To conclude this survey of Avestan, we have found four secure word equations with Vedic (*caxri-*, **jaγmi-*, **jaγni-*, and *°vaoiri-*), one less secure one (*°jaγri-*), five probable Iranian-only instances of the type (*mąnari-*, *°irīrici-*, *°daiði-*, *dādari-*, and *°uuuoci-*), and one very insecure one (*duδuβi°*). Especially noteworthy is the fact that in the core cases (Ved. *cákri-*: Av. *caxri-*; Ved. *jágmi-*: Av. **jaγmi-*; Ved. *jághni-*: Av. **jaγni-*) we find instances of the same syntactic behavior, namely, accusative assignment.

As for the contrast with the perfect stem, here too we find instances of the formal-functional mismatch described above for Vedic. Passages such as Yt.10.71 *naēda maniiete jaγnuuā*²⁸ "and he does not think that he has slain" and Y.22.3 *imąmca uruuarąm barəsmanąm jaγmūšimca ratufrītīm* "(I bring) both this Barəsma-plant and the Ratu-satisfaction which has arrived" show that the same semantic contrast between the resultative perfect active participle and the imperfective (iterative-intensive) *i*-adjective must be posited for Avestan,

27. The form *a-fra-cīcīš* 'not instructing', also attested in P 45, should be restored to *+a-fra-cīcīšiš* according to Tremblay (1998: 114), thus reflecting a reduplicated *i*-stem of the root *caēš* 'assign'. However, the text is unreliable as it is, and I will therefore not count this as an instance of the *cákri*-type in Avestan.

28. For expected **jaγanuā*, which is restored by Kuiper (1939: 52) in this passage, although a generalization of the weak stem *jaγn-* (cf. Ved. *jaghniš-*, etc.) cannot be completely excluded (Kümmel 2000: 629).

even though the material is much sparser than in Vedic. We can therefore conclude that the reduplicated *i*-adjectives are syntactically participial formations in both Vedic and Avestan that can assign structural case to the internal argument of the underlying verb and take adverbial modifiers, unlike true agent nominalizations or typical verbal adjectives. This is confirmed by the fact that the *cákri*-type patterns with root-accented *tar*-nominalizations in Vedic, which also behave like participles in that they take accusative and dative complements, combine with preverbs, and are often used predicatively denoting a habitual agent (Tichy 1995: 237; cf. the discussion of RV 6.23.4 above). The reduplicated *i*-stems differ both in Vedic and Avestan from “real” synchronic participles in that they are not formally part of any particular tense-aspect stem’s averbo.

On the semantic side, we have seen that the reduplicated *i*-stems behave like imperfective present participles, very often with iterative, intensive, or habitual semantics. In a number of cases, there is a clear contrast between a resultative-completive perfect stem and an imperfective (iterative or habitual) reduplicated *i*-stem. Although the Avestan evidence is sparse, it confirms the overall picture in the relevant cases, which means that the type is at least of common Indo-Iranian origin.

Based on these findings, I will argue in the next section that although synchronically associated with the perfect stem, the *cákri*-type cannot have its derivational roots there. I will also show that there is no other synchronic verbal category that could be considered the derivational basis.

§5. Three possible verbal categories present themselves *a priori* as candidates for the derivational basis of the *cákri*-type: the perfect because of the formal equivalence, the intensive because of the semantic equivalence with at least a subgroup of the *cákri*-formations, and the (*a*-)reduplicated present because of the formal equivalence and the non-perfective (though not necessarily iterative or intensive) semantics.

§5.1 I have argued so far that for a subgroup of reduplicated Vedic *i*-stems a derivational basis other than the perfect must be sought. These are the form-meaning mismatch forms (several of which have counterparts in Avestan), e.g.:

cákri- ‘habitually/repeatedly making, creating’: *cakṛvāms*- ‘having made, done’
jágmī- ‘often going; going quickly’: *jaganvāms*- ‘having reached (one’s destination)’
jághni- ‘repeatedly/habitually beating’: *jaghanvāms*- ‘having slain’
papí- ‘drinking (right now or habitually, e.g., soma)’: *papivāms*- ‘having drunk’
sásni- ‘habitually winning’: *sasavāms*- ‘having won’

On the other hand, we have a group of forms that do correspond semantically to their associated (usually stative present) perfects. This is the “form-meaning match” group discussed in §3.1, e.g., *tāṭṛpāṇá*- ‘satisfied’: *tāṭṛpi*- ‘satisfying’; *sāsavāms*- ‘victorious’: *sāsa*- ‘id.’; *tūtujāná*- ‘hurrying’: *tūtujī*- ‘id.’, etc.

One possible way of deriving the *cákri*-type from the synchronic perfect stem would be to assume that its starting point was the “match” group.²⁹ This would easily explain the imperfective semantics, since these perfect stems are functionally presents, and the iterative, habitual, and intensive semantics could have developed out of the present-like use in combination with the particular semantics of the roots in question (e.g., the “intensive” use of verbs of motion, etc.). Taking stative perfects as their basis, these reduplicated *i*-formations might then have been extended to resultative-completive perfect stems and kept their present-participle-like meaning, even though this did not match that of the verbal bases any

29. I am grateful to Stephanie Jamison and Alexander Lubotsky for bringing this possibility to my attention.

more. In this scenario, the “match” formations of §3.1 would be the starting point of the type and the “mismatch” formations in §3.2 its later extensions.

However, as I have argued above there is evidence that the core forms of the reduplicated *i*-stems are actually associated with resultative perfects (*cákri*-, *jágmī*-, *jághni*-, etc.), precisely the “form-meaning mismatch” type. The “mismatch” formations are much better attested in the R̥gveda than the “match” group (with the exception of *sāsaḥi*- and the formally ambiguous *dadī*-), and they have clear cognates in Avestan that have the same syntactic properties (accusative objects, preverb selection) as well as the same semantic properties (durative, iterative, or habitual Aktionsart). The only Vedic-Avestan pair for a reduplicated *i*-stem of the “match” group is *vavrī*-/*vaoiri*-, which at least in Vedic was lexicalized very early (but see the discussion of RV 1.54.10 above).

Furthermore, recall that even when *i*-adjectives are actually derived from the perfect stem, iterative or intensive connotations are not necessarily part of the semantics of the resulting formations. This is evident from the Vedic *u*-/*vi*-stems already mentioned, e.g., *jāgrvi*- ‘wary, alert’, perf. *jāgāra*; *dādhryvi*- ‘firm, able to support load’, perf. *dādhāra*, etc., which do not have the same semantic spectrum as the *cákri*-type.

This supports the conclusion that the oldest forms of the *cákri*-type are located in the “form-meaning mismatch” group and that the type can therefore not easily be explained in terms of the properties of the synchronic perfect (stative or otherwise). A different starting point should be sought.

§5.2 The Proto-Indo-European intensive as canonized in LIV² is generally assumed to have been of the basic shape $C_1\acute{e}C_2-C_1o/\phi C_2-E$, with “full” (or “heavy”) reduplication and *o*/*φ*-ablaut of the root vowel.³⁰ The situation in Vedic is somewhat more complicated. Schaefer (1994) distinguishes four formally different types of intensive formations. The rather marginal type I, which is characterized by accented long-vowel reduplication (e.g., *pāpaje* ‘stops, becomes still’), structurally resembles the long-vowel reduplicated perfects (except for the accentuation). There are a number of stems whose classification has traditionally been difficult and that seem to vacillate synchronically between intensives and perfects, suggesting that the perfect/intensive stem distinction was not entirely clear-cut for these cases (see Lubotsky 1997). Some of these roots also make *cákri*-formations: for *tuj*, variants with intensive stem accent and with perfect stem accent are found both for the perfect middle participle and for the reduplicated *i*-adjective. Another potential perfect/intensive overlap form is *sāsaḥi*- ‘winning repeatedly’, one of the most frequently attested forms of the *cákri*-type.³¹ This means that for two well-attested formations of the type that show long-vowel reduplication, a formal overlap between the synchronic perfect stem and a type I intensive stem could conceivably have existed at some stage preceding the attested language. An *i*-adjective derived from such an intensive stem could thus be reinterpreted as having been derived from the synchronic perfect stem. We could assume that at some point it was not clear to speakers that the formal derivational basis of these adjectives was the intensive rather than the perfect stem (type I intensives were rather marginal, after all), leading to an analogical process that substituted the perfect stem as the derivational basis:

30. On the intensive in general see Schaefer 1994; cf. also Narten 1981 and Jamison 1983b for arguments that this formation was already part of the proto-language.

31. Klingenschmitt (1982: 192) argues that the long reduplication syllable originates in the perfect participle of the root, namely *sāhvāms*- from **se-sḡh-uós*- with compensatory lengthening following cluster simplification. This would explain the origin of the syllable length and is compatible with assuming a reanalysis of certain forms as belonging to a putative type I intensive stem.

- (3) *tūtuj-*: *tūtujī-*
sāsah-: *sāsahī-*
cakr-: *x*, *x* = *cākri-*

There are, however, important arguments against deriving the *cākri*-type from the synchronic intensive stem in the way sketched out in (3). First, most of the well-attested forms of the *cākri*-type do not have long-vowel reduplication and are matched by Avestan cognates with the same syntactic behavior that also lack long-vowel reduplication (i.e., the “form-meaning mismatch” group). In fact, the long-vowel reduplicated *i*-stems are marginal in the Rigveda (except for *sāsahī-*) and are rarely attested with structural case objects or adverbials, the syntactic hallmarks of the type.

Second, in most cases the long vowel in the initial syllable of a reduplicated *i*-stem was clearly taken over from the synchronic perfect stem. A number of perfects of the “match” group had both long- and short-reduplicated forms in their paradigms,³² which facilitated the intrusion of long reduplication into the corresponding *cākri*-type formation. This is the case for *tūtujī-/tūtujāna-* vs. the weak perfect stem *tutuj-*, as well as *sāsahī-* (perfect stem *sāsah-/sāsah-/sāsāh-*³³) and the pair *yūyudhi-/yūyudhi-* (perfect stem *yuyudh-/yūyudh-*, see Kümmel 2000: 413), where both variants were preserved in the *i*-adjective. The fluctuation between short- and long-vowel reduplication in the perfect is morphologically conditioned, but in some cases has a diachronic phonological basis, as in the case of Ved. *jāgāra* < **h₁ge-h₁gór-e* or *yūyudhi-* < **H₂iu-H₂iud^h-* ← **H₂e-H₂iud^h-*. Long-vowel reduplication is furthermore the rule in the weak stem of certain roots of the (PIIr.) shape **vV(R)C*, i.e., *vah*, *van*, *vart*, etc.,³⁴ and was analogically extended to other perfects with a light root syllable (Kümmel 2000: 21ff.). For most forms of the “form-meaning match” type, the long-vowel reduplication can be traced back to the corresponding perfect stem (this holds for *ānāsi-*, *tātṛpi-*, *tūtujī-*, *yūyudhi-*, *sāsahī-*, and maybe *dādhr̥si-*); it then became the preferred pattern for trisyllabic reduplicated *i*-stems made to roots with a root vowel *-a-*, *-i-*, or *-u-* in the weak stem (cf. *cācali-*, *vāvahi-*, *yūyuvi-*). This means that the long-vowel reduplicated *i*-adjectives are an inner-Vedic development linked with a particular group of perfect stems and do not presuppose intensive stems of the same shape. Furthermore, as we have seen, there are only a few roots where the perfect/intensive stem overlap might have occurred in the first place—not exactly solid ground for the analogy scenario proposed in (3). All in all, it looks as though we must discard the intensive stem as the ancestral category to the *cākri*-type.³⁵

§5.3 There is one more possibility, namely deriving the *cākri*-type from the reduplicated present stem. Synchronically, four of the reduplicated *i*-adjectives are associated with a reduplicated present stem, namely *dadī-* ‘giving’: 3sg.pres. *dādāti*, plural stem *dad-*;

32. On long reduplication in the perfect in general see Krisch 1996; see also Gunkel 2010: 92ff. for a recent discussion.

33. Short-vowel reduplication may actually be metrically preferable for this stem in a number of cases which have been transmitted with long-vowel reduplication; cf. Arnold 1905: 129; Kümmel 2000: 569ff.

34. Cf. Leumann 1952: 14. I am grateful to Dieter Gunkel for bringing this to my attention and for helpful discussion of these forms.

35. An alternative “intensive stem scenario” could be based on a suggestion by Kellens (1984: 195 n. 4), who analyzes the Avestan reduplicated stem *jaṇna-* (*ganljan* ‘slay’) as dissimilated from the intensive stem **janṇma-*. One could therefore imagine that **jaṇni-* (**jaṇništa-*) was derived directly from this intensive stem and that the pattern spread from there. However, the phonological development assumed by Kellens is not tenable (García Ramón 1998: 150; see the discussion in §4 above for a different analysis of *jaṇna-*), nor is the assumption that this form alone was the starting point of the whole type. Furthermore, the Vedic intensive stem of the same root is non-dissimilated *janghan-*, and the genitive singular of the active present participle, *jānghnatas* (RV 9.66.25), shows that the sequence VNCNV was at least synchronically tolerated.

dādhi- ‘placing’: 3sg.pres. *dādhāti*, 3pl. *dādhati*; *pápri-* ‘helping across’: 3sg.pres. *píparti*, 3pl. *píprati* (the accent on the reduplicated syllable and the preserved **e*-grade in the corresponding *cákri*-formation could indicate that this present once had PIE **e*-/PIIr. **a*-reduplication); and *súšvi-* ‘pressing’: 3pl.pres. *sušvati*, although this is an inner-Vedic innovation (cf. the discussion above).

This approach has several drawbacks: The reduplicated *i*-stems that could fall into this category do not have equivalents in Avestan (the root of °*daiði-* cannot be determined), and, apart from *dadí-* and *súšvi-*, they are rare in the Rígvēda. Furthermore, for three out of the four (*dadí-*, *dādhi-*, and *pápri-*) both the present and the perfect stem could be the derivational basis on purely formal grounds (cf. the discussion in §3.4). These forms hardly seem an ideal starting point for the type in Vedic, let alone in Avestan.

§6. To conclude, there is no convincing verbal derivational basis for the *cákri*-type formations at the synchronic level in Indo-Iranian. The synchronic association of the reduplicated *i*-stems with the weak perfect stem must be secondary and based solely on formal identity—which in turn explains why we so often find a “form-meaning mismatch” between the two.

Of course, this finding relegates the problem of the original derivational basis of reduplicated *i*-stems to the pre-Proto-Indo-Iranian stage. The deeper prehistory of this type cannot be discussed here, but one might speculate that it was originally either deverbal to a pre-Proto-Indo-Iranian reduplicated tense/aspect category that was modified or lost in the two branches, or denominal to other reduplicated stems, for instance of the type Ved. *cakrá-*, Gk. κύκλος ‘wheel’; YAv. *baβra-*, Lith. *bèbras* ‘beaver’; Gk. πέπλος ‘garment’, etc. (see Oettinger 2012 for more examples).

On the other hand, it is easy to find parallels for the use of *-i-* as a participle-like suffix in Vedic. Vedic has a number of unreduplicated deverbal *i*-stems in the second member of compounds (cf. AiG II,2: 294ff.), and there are a few simplex instances as well. These stems usually appear in verbal governing compounds and in composition with preverbs or adverbial elements. They vary between synchronic full- and zero-grade of the root vowel, with a predilection for the first. Examples of verbal governing compounds of this type include *pád-grbh-i-* ‘grabbing the feet’ (PN, *grbh* ‘grab’), *go-dár-i-* ‘splitting cows’ (out of rock, said of Indra, *dr* ‘split’), *saho-bhár-i-* ‘bringing strength’ (*bhṛ* ‘carry’), *paśu-rákṣ-i-* ‘protecting cattle’ (*rakṣ* ‘protect’), and *vṛṣṭi-ván-i-* ‘winning rain’ (*van* ‘win’). In composition with preverbs and adverbs we find, e.g., *dur-gṛbh-i-* ‘difficult to grab’, *ā-tán-i-* ‘stretching out (to)’ (*tan* ‘span, stretch’), *ā-yáj-i-* ‘procuring through sacrifice; herbeiopfern’ (*yaj* ‘sacrifice’), and *mahi-śvān-i-* ‘resounding mightily’ (*svan* ‘sound’). The latter group closely resembles the *cákri*-type in that it also assigns accusative case to its internal argument (if expressed):

RV 2.1.10d: *tvám viśíkṣur asi yajñám ātániḥ*

You are willing to help out, **spreading out the sacrifice**.³⁶

The deverbal use of the suffix is a largely inner-Indic development; deverbal *i*-stems are rare in Avestan. Tremblay (1998: 103) interprets this as an archaic trait of the Iranian branch, which has mostly preserved the (older) denominal use of the suffix. There are some signs of verbal (or at least ambiguous) use, however: *uz.daēz-i-* ‘wall, dam’ (*daēz* ‘pile up’) is reminiscent of the Vedic formations cited above, but could of course also be denominal to *uz.daēza-* ‘pile of earth’, and *baoiði-* ‘smell, fragrance’ could be a derivative of the verbal root *baod* ‘sense, perceive’ (cf. KEWA II: 449f. and Tremblay 1998: 90f.) or denominal to *baoda-* ‘smell’. Equations such as Ved. *cákri-*: Av. *caxri-*; Ved. *vávri-*: Av. *vaoiri-*, etc., sug-

36. Geldner, RV I: 277: “du bist der Prüfer, wenn du das Opfer ausrichtest.”

gest that the verbal use of this suffix was at least incipient in Avestan, if not as productive as in Vedic.

The suffix *-i-* was therefore established as a way of deriving adjectival formations from verbal roots at least in Vedic, in particular in compounds.³⁷ It is instructive to compare this to the development of the adjectival *a-* and *u-*stems within Indic, both of which were originally denominal suffixes that were extended to deriving deverbal adjectives from morphologically characterized tense/aspect stems:

- (4) Deverbal *a-*stems (see AiG II,2: 83ff.):
 Intensive: *vevijá-* ‘driving’: *vévijāna-*; *rerihá-* ‘licking’: *rérihāna-*; *-naṃnamá-* ‘bending’: *náṃnamīti*; *ā-dardirá-* ‘crushing’: *adardiruh*, etc.
 Future: *janīṣya-* (ep.) ‘who shall be born’: *janīṣyate*; *bhaviṣya-* (ep.) ‘who will be(come)’: *bhaviṣyāti*, etc.
- (5) Deverbal *u-*stems (cf. AiG II,2: 468ff., Rau 1998):
 Desiderative: *jigīṣú-* ‘wanting to be victorious’: *jígīṣati*; *didhiṣú-* ‘wanting to obtain’: *dídhiṣati*, etc.
 Present: *bhindú-* ‘splitting’: *bhindati*; *mandú-* ‘joyous’: *mándati*; *krīḍú-* ‘dancing’: *krīḍati*, etc.

The difference between these formations and the *cákri*-type is that whereas the former have clear synchronic derivational bases to which they correspond semantically, no such basis can be established for the *cákri*-type (at least not for the “mismatch” group, §3.2). The *i*-suffix itself, however, may have had a history similar to the adjectival *a-* and *u-*stems, starting out as a denominal suffix and then spreading to verbal roots and eventually tense/aspect stems.

§7. To summarize, I have argued that based on their verbal semantics the Indo-Iranian reduplicated adjectives of the type *cákri*- cannot easily be derived from the synchronic perfect stem, even though they are formally associated with it. This is especially evident for the group of forms attested both in Vedic and Avestan that are synchronically associated with resultative-completive perfect stems (the “form-meaning mismatch” group). Semantically, *cákri*-formations are imperfective, often with iterative, habitual, or intensive meaning. They are used to designate habitual agents, contrasting with the use of the perfect participles of the corresponding perfects. Since there is no synchronic verbal category that could have provided the derivational basis, the type may ultimately have its roots in a pre-Proto-Indo-Iranian linguistic stage.

APPENDIX

The following tables summarize the distributive facts of the *cákri*-type in the Rigveda. Table 1 gives the total number of attestations as distributed across the ten books (ordered from the most to the least frequent ones). In both tables I have subsumed both *pápurī-* and *páprī-* under one entry each, despite the fact that they may in fact go back to different roots (see the discussion in §2).

37. An anonymous reviewer has pointed out that the existence of absolutes of the type *abhi-gūryā*, *pari-tápyā*, etc., might be interpreted as evidence that the *i*-stems used in composition with preverbs were actually nomina actionis and cannot be compared to the *cákri*-type. However, there is an alternative analysis of these forms, namely as grammaticalized instrumentals of deverbal *ya*-abstracts (this is also the view of AiG II,2: 788, where the parallels between the *ya*-abstracts and the absolutes are discussed in more detail). In Proto-Indo-European terms, this means parsing the ending as **-iō-h₁* rather than **-i-eh₁*. Furthermore, given what we know about the functions of PIE nominal **-i-*, use as a verbal-abstract-forming suffix would not preclude use as an agentive suffix—both functions are attested across the Indo-European branches.

Table 1. Frequency of attestation by book (simplex and compound forms)

Form	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
<i>dadí-</i>	5	5		1		1		7	1	1	21
<i>sāsahí-</i>	4	2	2					5	1	5	19
<i>vavrí-</i>	5			1	3				2	3	14
<i>súšvi-</i>	1			5	1	3			1		11
<i>cákri-</i>	2	1	2		1	1	1		2		10
<i>sásni-</i>		2	1		1			1	2	3	10
<i>jágmi-</i>	2	1				1	1	2		1	8
<i>táturi-</i>	1			1		3					5
<i>tūtují-</i>				1		1	2			1	5
<i>yayí-</i>	2				2					1	5
<i>pápuri-</i>	2			1		1					4
° <i>ánaśí-</i>			1						2		3
<i>pápri-</i>	2	1				1		1			5
° <i>cācali-</i>										2	2
<i>jághni-</i>									2		2
<i>dādhr̥ṣi-</i>		1		1							2
<i>babhrí-</i>			1			1					2
<i>yúyudhi-</i>	1									1	2
<i>vívici-</i>					1			1			2
<i>jáguri-</i>										1	1
<i>jághri-</i>	1										1
° <i>jajñi-</i>										1	1
<i>tāt̥ṛpi-</i>			1								1
<i>tūtují-</i>										1	1
<i>dádhi-</i>										1	1
<i>papí-</i>						1					1
<i>yúyudhi-</i>										1	1
<i>yúyuvi-</i>					1						1
<i>vāvahi-</i>									1		1
° <i>śíśvi-</i>	1										1
<i>sásri-</i>										1	1
Total	29	13	8	11	10	14	4	17	14	24	144

Table 2 sums up the syntactic properties of the type. Ø means that no object is expressed, acc. = accusative object, etc. The last two rows indicate whether the form in question is modified by an adverb or an adjective. This distinction, however, is a less fine-grained diagnostic for distinguishing between agent nouns and verbal participles than the case of genitive vs. accusative objects. Note that the “direct object”-like adverbials of *jágmi-* are listed under “acc.,” whereas *sásri-* is treated as intransitive with a locative adverbial.

Table 2. Case assignment: simplex and compound forms

Form	Ø	acc.	acc. & acc.	dat.	acc. & dat.	gen.	Total	adv.	adj.
<i>dadí-</i>	7	10		1	3		21	3	2
<i>sāsahí-</i>	17					2 ³⁸	19		

38. In RV 2.23.3d *m̥ḍhas* could also be acc.pl.

vavrí-	11	1				1	14		1
súsvi-	11						11		1
cákri-		6	1	1	1	1	10		1
sásni-	8	2					10	2	1
jágmi- ³⁹	4	2				1	7		2
táturi-	5						5		
tūtūji-	5						5		1
yayí-	5						5		
pápuri-	3			1			4		
°ānaśí-	2	1					3		
pápri-	3	2					5		
°cācali-	2						2		
jághni-	1	1					2	1	
dādhṛṣi-	2						2		
babhrí-	1	1					2		
yúyudhi-	2						2		
vívici-	2						2		
jáguri-	1						1		
jághri-	1						1		
°jajñi-	1						1		
tātṛpi-	1						1		
tūtūjī-						1	1		
dādhi-	1						1		
papí-		1					1		
yúyudhi-	1						1		
yúyuvi-	1						1		
vāvahi-	1						1		
°śíśvi-	1						1		
sásri-	1						1	1	
Total	102	27	1	3	4	6	143	7	9

39. Without RV 10.106.8d, which is unclear.

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