

Theme vowels, iterativity and verb classes: A DM analysis

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ABSTRACT

This paper is concerned with the relation between theme vowels, mainly *-a*, iterativity and verb class properties of Czech predicates. It investigates three phenomena – participial adjectives, motion verbs and impersonal constructions – and there, two puzzles: unaccusative participial adjectives with the “transitive” *-n/-t* suffix and unaccusative impersonal constructions. The three phenomena share some properties: they have the iterative (or more generally, plural) interpretation; display specific changes in the argument structure behavior and crucially, they contain the verbal theme *-a*. The article addresses the question of what role the theme *-a* has in derivations of these phenomena. It argues that the theme *-a* is a marker with several functions; among other things, it realizes the iterative head.

KEYWORDS impersonal constructions · iterativity · motion verbs · participial adjectives · theme vowels · verb classes · Voice

1 THREE PHENOMENA

1.1 BACKGROUND

This section discusses three phenomena – participial adjectives, motion verbs and impersonal constructions – that display an interesting pattern: They contain the theme vowel *-a* which brings about the iterative interpretation (in certain cases, also a plural argument) and a specific argument structure behavior.

It is known at least for Russian that directed motion verbs display the unaccusative pattern of behavior, whereas non-directed motion verbs behave like unergatives (Schoorlemmer 1995, Harves 2002). This article shows that the same holds for Czech; non-directed motion verbs as *běhat* ‘to run’ have the theme *-a* that licenses the iterative (distributive) interpretation and the presence of the agent. What is less known is the fact that there are unaccusative impersonal constructions and unaccusative participial adjectives with the “transitive” suffix *-n/t* in Czech. These facts are puzzling since the *-n/t* suffix is considered to attach to transitives (e.g. Petr 1986) and the formation of impersonal constructions from unaccusatives is very restricted in Slavic (Fehrmann et al. 2010). Crucially, both the presence of *-n/t* in unaccusative participial adjectives and the presence of the reflexive ‘self’ in unaccusative impersonal constructions are licensed by the vowel *-a*. Therefore, the research question addressed in this article is: What role does the theme *-a* play in derivations of these phenomena?

As to my background assumptions, I follow the Distributed Morphology approach (Halle & Marantz 1993, Harley & Noyer 1999), in which morphemes represent heads of syntactic structure. Roots are acategorial and the insertion of vocabulary items is driven by the Subset Principle. In addition, I assume spanning (e.g. Abels & Muriungi 2008, Julien 2015), i.e. one marker can spell out (span) more heads that are locally related. This assumption will derive the fact that the theme *-a* can fulfill more functions, that is, realize several heads without being reduplicated.

Concerning clausal structure and aspectual notions, I assume the two-tiered aspectual system (Smith 1997, Filip 1999, Pancheva & von Stechow 2004). While lexical (situation)

aspect is concerned with eventuality types (in the sense of Vendler 1957) and belongs mainly to the verbal domain, the viewpoint (morphological) aspect relates the reference time to the event time (e.g., Paslawska & von Stechow 2003) and is encoded in the aspectual projection located between the Voice phrase and the projection dedicated to tense. The value of the aspectual head is determined by the operation Agree relating Asp with the closest head bearing an aspectual feature, perfective or imperfective (Biskup 2023). While heads realized by the corresponding prefix have the perfective feature, the iterative head has the imperfective feature. Aspectual markers can affect both types of aspect, e.g. a prefix can bring about resultativity – deriving an accomplishment from a process – and at the same time, perfectivity (valuing the interpretable feature of Asp as perfective; see Filip 2000 for the claim that prefixes are not just grammatical markers of perfectivity). The value of the aspectual head is also relevant to selection properties of specific participial heads.

I will show that the vowel *-a* can also derive secondary imperfective predicates. It is known that imperfectivized verbs can have more meanings (e.g., Comrie 1976, Dickey 2000, Gehrke to appear), most importantly for this article, they can have the iterative meaning. This meaning is defined in §2 and syntactically, it is encoded in the iterative projection. It stands in contrast with the progressive (ongoing) and habitual meanings, which can be treated in terms of the partitive operator and the modalized/quasi universal quantifier, occurring in the progressive projection and the habitual projection, respectively (Krifka 1992, Filip & Carlson 1997, Greenberg 2007, Biskup 2024, 2025).

The remainder of the article is structured as follows. §1.2 discusses in some detail relevant properties of participial adjectives, concretely, adjectives based on verbal *-l* participles (also called past participles) and *-n/t* participles (also called passive participles). §1.3 is concerned with directed and non-directed motion verbs. §1.4 investigates effects of the vowel *-a* in impersonal constructions. §2 proposes a semantic analysis of the iterative effect of *-a*. §3 analyzes the vowel *-a* and the three phenomena from the morphosyntactic point of view. §4 provides a summary.

1.2 PARTICIPIAL ADJECTIVES

Czech, and Slavic more generally, use two types of participial adjectives that predicate over the underlying object, resultative participial adjectives and past passive participial adjectives (e.g., Schoorlemmer 1995, Cetnarowska 2000, Kosta & Frasek 2004, Veselovská & Karlík 2004, Biskup 2019). Resultative participial adjectives are based on *-l* participles (also called past participles). They contain the suffix *-l* plus some adjectival agreement ending, as in (1-a). What is important is that resultative participial adjectives are (with few exceptions) derived from unaccusative stems, as is the case in (1-a). This example contrasts with the ungrammatical *-l* participial adjective based on the transitive stem in (1-b).¹ These participial adjectives are called “resultative” since they are derived from perfective predicates: consider e.g. (1-a), with the perfective, prefixed *rozkvetlý*, in which the referent denoted by *strom* is in the result state of being in blossom.

- (1) a. Roz-kvet-l-ý strom. (Czech)
 apart-blossom-l-M.SG tree.M.SG
 ‘A tree in blossom.’

b. *Pře-čet-l-á kniha. (Czech)
 over-read-l-F.SG book.F.SG
 [Intended] ‘A book that was read through’

In contrast, past passive participial adjectives contain *-n/t* plus the adjectival agreement marker, as in (2-a), since they are based on verbal *-n/t* participles. Crucially, these

¹The term “stem” is meant descriptively. It denotes a root with some, but not all, affixes. I use “stem” (instead of e.g. “verb”) since the participial adjectives are not derived from complete verbs or verbal participles. The final agreement marker of verbal participles is missing in them.

participial adjectives are standardly formed from transitive stems, as in (2-a), which can be either perfective (prefixed) or imperfective (unprefixed). Hence, we do not expect an overlap with the resultative participial adjectives, formed from unaccusatives. Indeed, the passive participial adjective containing the unaccusative predicate in (2-b) is ungrammatical.

- (2) a. (Pře-)čt-en-á kniha. (Czech)
 over-read-n/t-F.SG book.F.SG
 [Unprefixed] 'A book that is being read.' / [Prefixed] 'A book that was read through.'
- b. *Roz-kvet-en-ý strom. (Czech)
 apart-blossom-n/t-M.SG tree.M.SG
 [Intended] 'A tree in blossom.'

Then, given examples as (2-b) and the fact that intransitives do not form the *-n/t* participle (Petr 1986, Karlík et al. 1995), it is surprising that there are some unaccusative participial adjectives with the "transitive" *-n/t* suffix, as in (3-a). In contrast to transitive *-n/t* participial adjectives as in (2-a), the unaccusative stem in (3) must be perfective, as shown by ungrammaticality of the imperfective example without the prefix in (2-b). In addition, (3-a) contains the theme *-a* and has the iterative interpretation: There are several hairs that fell out and the events of falling are non-simultaneous (but can be temporally adjacent or partially overlapping). This is supported by the fact that the participial adjective cannot be combined with a singular argument, as shown in (3-c). This example contrasts with the well-formed (3-a), containing the plural noun.

- (3) a. Vy-pad-a-n-é vlas-y. (Czech)
 out-fall-TH-n/t-PL hair-M.PL
 'Hair loss.'
- b. *Pad-a-n-é vlas-y. (Czech)
 fall-TH-n/t-PL hair-M.PL
 [Intended] 'One hair that fell out.'
- c. #Vy-pad-a-n-ý vlas. (Czech)
 out-fall-TH-n/t-SG hair.M.SG
 [Intended] 'One hair that fell out.'
- d. Vy-pad-l-ý vlas. (Czech)
 out-fall-l-SG hair.M.SG
 'One hair that fell out.'
- e. *Vy-pad-a-l-ý/-é vlas.Ø/-y. (Czech)
 out-fall-TH-l-SG/PL hair.M.SG/M.PL
 [Intended for sg.] 'A hair that fell out.' / [Intended for pl.] 'Hair loss.'

In contrast to the *-ný/tý* participial adjective in (3-c), the singular noun can be combined with the *-lý* participial adjective, as in (3-d), resulting in the interpretation that there was one (non-iterated) event of hair falling. Together with the other examples in (3), (3-e) shows that the iterative *-a* blocks the presence of the participial suffix *-l* in the participial adjectives, i.e. that there is a dependency between the presence of *-a* and the presence of the *-n/t* participial allomorph in the participial adjectives.

An argument for the iterative (and plural) effect of the theme vowel comes from the past tense, which uses the *-l* participle. Examples (4-a) and (4-b), with the theme *-a*, show in analogy to (3) that only a plural argument can be used. In contrast, if the theme *-a* is not present, as in (4-c) and (4-d), both the singular and the plural argument can be used.

- (4) a. Vy-pad-a-l-a mu jablk-a. (Czech)
 out-fall-TH-l-PL him apple-N.PL
 'His apples fell out.'

- b. *Vy-pad-a-l-o mu jablk-o. (Czech)
out-fall-TH-l-SG him apple-N.SG
[Intended] 'His apple fell out.'
- c. Vy-pad-l-a mu jablk-a. (Czech)
out-fall-l-PL him apple-N.PL
'His apples fell out.'
- d. Vy-pad-l-o mu jablk-o. (Czech)
out-fall-l-SG him apple-N.SG
'His apple fell out.'

Moreover, (5-a), a modified version of (4-a), shows that the events of falling are non-simultaneous (successive) in the case of the presence of the theme *-a*, analogously to (3-a). However, in (5-b), without *-a* (a modified version of (4-c)), events can be simultaneous.

- (5) a. Jablk-a mu vy-pad-a-l-a postupně / #najednou. (Czech)
apple-N.PL him out-fall-TH-l-PL one.by.one / #at.once
'His apples fell out one by one/#at once.'
- b. Jablk-a mu vy-pad-l-a postupně / najednou. (Czech)
apple-N.PL him out-fall-l-PL one.by.one / at.once
'His apples fell out one by one/at once.'

Other examples of unaccusatives with *-n/t* can be found in (6) and (7). The base (a) examples show unaccusative *-lý* adjectives, whereas (b) examples demonstrate the unaccusative stems in corresponding *-ný/tý* adjectives with the theme *-a*. What is important is the fact that the nominal argument in (6-b) does not have to be plural. This results from the fact that the referent of *potrubí* 'pipe' can be affected partially (several times) by the event of cracking. This contrasts with the 'fall' examples in (3) and (4) and the 'blossom' example in (7), in which the entire entity – 'hair', 'apple' and 'flower' – is affected by the corresponding event. Thus, since it is not possible to distribute over the participant in the singular (7-c), the example is ungrammatical.

- (6) a. Prask-l-é potrubí. (Czech)
crack-l-SG pipe.N.SG
'a pipe with a crack'
- b. Po-prask-a-n-é potrubí. (Czech)
on-crack-TH-n/t-SG pipe.N.SG
'a pipe with several cracks'
- (7) a. Roz-kvet-l-á kytka. (Czech)
apart-blossom-l-SG flower-F.SG
'A flower in blossom.'
- b. *(Po)-roz-kvét-a-n-é kytka. (Czech)
on-apart-blossom-TH-n/t-PL flower-F.PL
'Flowers in blossom.'
- c. *Po-roz-kvét-a-n-á kytka. (Czech)
on-apart-blossom-TH-n/t-SG flower-F.SG
[Intended] 'A flower in blossom.'

Furthermore, example (7-b) illustrates that in some cases – because of perfectivity – two prefixes are necessary. The reason is that the predicate with just the prefix *roz-* (*rozkvétat* 'to (be) blossom(ing)') is imperfective, in contrast to cases with one prefix as *popraskat* 'to crack' in (6-b) and *vypadat* 'to fall out' in (4-a) (for details, see §3).

There are also other unaccusatives with the transitive *-n/t* suffix; consider e.g. *rozpukané* 'chapped lips' and the unaccusative stems already known, now with distinct prefixes: *rozpraskané* 'chapped', *popadané* 'dropped one after another', *povykvétané* 'blossomed one after another'.

To sum up, it was shown that the theme suffix *-a* can iterate the event of the base

-a	
	iterates event
	non-simultaneity of events
	distribution over participants in specific cases
	licenses the transitive -n/t

Table 1: Effects of -a in participial adjectives.

predicate and that the events are not simultaneous; consider table 1. If the argument of the participial adjective is affected as a whole (only once) by the event expressed by the adjective, then it must be plural. In such cases, verbal plurality corresponds to the nominal plurality. In contrast, if it is possible to distribute over the participant of the event, as in the case of a pipe with cracks in (6-b), the noun can be singular. Further, the theme -a licenses the presence of the transitive -n/t suffix, in connection with other conditions. In addition, it was shown that unaccusative participial adjectives with -n/t need a perfective base in contrast to transitive -n/t adjectives as *čtený* 'being read'.

1.3 MOTION VERBS

It has been argued that Russian directed motion verbs as *bežat* 'to run' are unaccusative, whereas non-directed motion verbs as *begať* 'to run' are unergative (e.g. Schoorlemmer 1995, Harves 2002, Romanova 2004; compare also Levin & Rappaport Hovav 1995 and Ramchand 1997 for non-Russian languages). The examples with the cumulative prefix *na-* 'on' in (8), based on Romanova's (2004: 273) Russian examples, demonstrate the same for Czech. The rationale behind this test is that the cumulative prefix can only quantify over the internal argument. Thus, the directed verb *bežet* 'to run' behaves unaccusatively; it can be prefixed with the cumulative *na-*, as in (8-a). In contrast, the non-directed *běhat* 'to run', with -a, behaves unergatively: it cannot be prefixed with *na-*, as in (8-b). As expected, when a direct object is added to the non-directed predicate, the sentence becomes grammatical; consider (8-c).²

- (8) a. Tolik lidí tam na-běh-l-o! (Czech)
 so.many people there on-run-l-N.SG
 'So many people gathered there!'
 b. *Tolik lidí tam na-běh-a-l-o! (Czech)
 so.many people there on-run-TH-l-N.SG
 [Intended] 'So many people ran there!'
 c. Tolik lidí tam na-běh-a-l-o 5 km! (Czech)
 so.many people there on-run-TH-l-N.SG 5 km
 'So many people ran 5 km there!'

The same behavior is observed with the directed *jet* 'to go' and the non-directed *jezdit* 'to go'. The pair differs from (8) only in the presence of the theme -i, which replaces the suffix -a. Example (9-a) demonstrates that the directed verb behaves unaccusatively and (9-b) shows that the non-directed verb behaves unergatively.³ Again, the added object makes the non-directed example grammatical, as illustrated in (9-c).

- (9) a. Tolik lidí tam na-je-l-o! (Czech)
 so.many people there on-go-l-N.SG
 'So many people gathered there!'

²These cases differ from predicates with the lexical (i.e. non-cumulative) prefix *na-* as *na-běhl na někoho* 'he runs up on sb.' and *na-letěl na něco* 'he flew on sth., he was tricked'.

³For a reviewer, (9-b) is acceptable. According to his/her description, it seems that in his/her idiolect, the cumulative *na-* can quantify over time intervals or places, which then leads to a huge amount of participants.

- b. *Tolik lidí tam na-jezd-i-l-o! (Czech)
so.many people there on-go-TH-l-N.SG
[Intended] 'So many people went there!'
- c. Tolik lidí tam na-jezd-i-l-o 5 km! (Czech)
so.many people there on-go-TH-l-N.SG 5 km
'So many people went 5km there!'

Regarding the interpretation, non-directed verbs have the iterative or the generic meaning and the events denoted by the predicate are mostly non-simultaneous; consider (10-b) and (11-b). Non-directed predicates use the themes *-a* and *-i*, which are lengthened in the present tense, as in (10-b) and (11-b). In contrast, directed verbs have the progressive reading under normal circumstances, as in (10-a) and (11-a). These predicates have the infinitival theme *-e*, as *běž-e-t* in (10-a), or they lack the infinitival theme, as in the case of *nés-t* in (11-a).⁴

- (10) a. Jirka běž-í do školy. (Czech)
Jirka.NOM run-TH.3.SG to school
'Jirka is running to school.'
- b. Jirka běh-á do školy. (Czech)
Jirka.NOM run-TH.3.SG to school
'Jirka runs to school.'
- (11) a. Jirka nes-e aktovku. (Czech)
Jirka.NOM carry-TH.3.SG schoolbag.ACC
'Jirka is carrying a schoolbag.'
- b. Jirka nos-í aktovku. (Czech)
Jirka.NOM carry-TH.3.SG schoolbag.ACC
'Jirka carries a schoolbag.'

This distribution of theme vowels is not accidental and has historic reasons; e.g. according to Nichols (2010 and references therein), the theme *-i* (plus the *-o-* grade in the root), as in *nosit* 'to carry' in (11-b), represents the Indo-European causative morphology. Similarly, according to Medová (2012), *-i* marks transitivity (agentivity), whereas *-e* marks unaccusativity.

Data with participial adjectives support the relation between directed motion verbs, the theme *-e* and unaccusativity on one side and between non-directed predicates, themes *-a* and *-i*, and unergativity on the other side. Building on the idea that verbal prefixes can transitivize unergative stems but cannot transitivize unaccusatives (in which they compete for the complement position with the internal argument; see Biskup 2019), the following prefixed participial adjectives demonstrate that *jít* 'to go' and *běž-e-t* 'to run' are indeed unaccusative, whereas *chod-i-t* 'to go' and *běh-a-t* 'to run' are unergative. Recall also from §1.2 that under standard circumstances, the suffix *-l* is used with unaccusative stems and *-n/t* with transitive stems in participial adjectives. Specifically, since the prefixed *ode-jít* 'go away' can form *-l* participial adjectives but cannot derive *-n/t* adjectives, as in (12), the directed *jít* 'to go' is unaccusative.⁵ (13), with *od-chodit* 'complete going', displays the opposite pattern. Hence, the non-directed *chod-i-t* 'to go' is unergative.

- (12) a. Odešlý dopis. (Czech)
went.away letter
'A letter that was sent.'
- b. *Odejítý dopis. (Czech)
gone.away letter
[Intended] 'A letter that was sent.'

⁴The theme *-e* in *nese* in (11-a) is a present tense marker.

⁵There is root suppletion; the past participle of *jít* 'to go' is *šel* 'he/it went'.

- (13) a. *Odchodilý kilometr. (Czech)
 went.away kilometer
 [Intended] ‘Somebody went one kilometer.’
- b. Odchozený kilometr. (Czech)
 gone.away kilometer
 ‘Somebody went one kilometer.’

Examples (14) and (15) test the pair *běž-e-t/běh-a-t* ‘to run’. While the prefixed directed predicate can derive an *-l* participial adjective and cannot form the *-n/t* adjective, as in (14), the non-directed verb again manifests the opposite pattern, as demonstrated in (15).⁶ That means that the directed *běž-e-t*, with the theme *-e*, is unaccusative and the non-directed *běh-a-t*, with the theme *-a*, is unergative.

- (14) a. Naběhlý ret. (Czech)
 swollen lip
 ‘A swollen lip.’
- b. *Naběžený ret. (Czech)
 swollen lip
 [Intended] ‘A swollen lip.’
- (15) a. *Naběhalé kilometry. (Czech)
 ran kilometers
 [Intended] ‘Kilometers that were run.’
- b. Naběhané kilometry. (Czech)
 run kilometers
 ‘Kilometers that were run.’

Finally, the same pattern is observed in the case of the pair *let-ě-t/lét-a-t* ‘to fly’. Consider the contrast between the prefixed directed predicate in (16), with the theme *-e*, and participial adjectives of the corresponding non-directed motion predicate in (17), with *-a*.⁷

- (16) a. Odlétlý kamínek. (Czech)
 fell.off stone
 ‘A stone that fell off.’
- b. *Odletěný kamínek. (Czech)
 fallen.off stone
 [Intended] ‘A stone that fell off.’
- (17) a. *Odlétalé kilometry. (Czech)
 flew.away kilometers
 [Intended] ‘Kilometers that were flown.’
- b. Odlétané kilometry. (Czech)
 flown.away kilometers
 ‘Kilometers that were flown.’

To summarize this section, the theme *-a* marks the unergative class of motion verbs, thus like the theme vowel *-i*, it brings about agentivity. Analogously to *-i*, it also induces iterativity of the event denoted by the predicate. Typically, the events are non-simultaneous; consider table 2.

⁶In (14-b), the front vowel *-e* palatalizes the root consonant *h* to *ž*. The same contrast is found in the infinitives *běž-e-t* and *běh-a-t* ‘to run’.

⁷Transitive motion verbs are not interesting in this respect since both directed and non-directed predicates are transitive and both types form *-n/t* participial adjectives (independently of whether or not prefixed).

<i>-a</i>
iterates event
typically non-simultaneity of events
brings about agentivity
marks unergativity

Table 2: Effects of *-a* in motion verbs.

1.4 IMPERSONAL CONSTRUCTIONS

Impersonal constructions can be derived from unergative and transitive predicates, as shown in (18) and (19), respectively. This holds independently of whether the predicate is imperfective, as in (18-a) and (19-a), or perfective, as in (18-b) and (19-b).

- (18) a. Pracova-l-o se. (Czech)
 work-l-3.N.SG self
 'People worked.'
 b. Do-pracova-l-o se. (Czech)
 to-work-l-3.N.SG self
 'People finished working.'
- (19) a. Už se čet-l-o. (Czech)
 already self read-l-3.N.SG
 'People already read.'
 b. Už se do-čet-l-o. (Czech)
 already self to-read-l-3.N.SG
 'People already finished reading.'

In contrast, the formation of impersonal constructions from unaccusatives is very restricted (e.g. Fehrman et al. 2010); consider (20-a), with the perfective *umřelo* 'died'. Given this, it is surprising that the secondary imperfective in (20-b), based on the unaccusative predicate in (20-a), is grammatical. The predicate in (20-b) is derived by the theme *-a* again and it can only have the iterative or habitual interpretation. That the progressive reading of (20-b) is not possible is shown by the contradictory continuation in (20-c).

- (20) a. *U-mře-l-o se na covid. (Czech)
 at-die-l-3.N.SG self on covid
 [Intended] 'People died of covid.'
 b. U-mír-a-l-o se na covid. (Czech)
 at-die-TH-l-3.N.SG self on covid
 'People died of covid.'
 c. #Ale nikdo nezemřel. (Czech)
 but nobody NEG.die.PTCP.3.M.SG
 'But nobody died.'

Another case of the impersonal construction with an unaccusative stem occurs in (21). Again, the perfective predicate is ungrammatical, as in (21-a), but the imperfectivized unaccusative, derived by *-(v)a-*, is grammatical, as shown in (21-b). The progressive reading is excluded, as evidenced by the contradictory continuation of (21-b), shown in (21-c). In (21-b), too, only the iterative or the habitual interpretation is possible.

- (21) a. *Na Beatles se o-mdl-e-l-o. (Czech)
 on Beatles self about-faint-TH-l-3.N.SG
 [Intended] 'People fell into a faint at Beatles concerts/the Beatles concert.'

<i>-a</i>	
	iterates event
	non-simultaneity of events and distribution over participants in specific cases
	licenses the reflexive <i>se</i> with unaccusatives
	similarity between <i>-a</i> unaccusatives and agentive predicates

Table 3: Effects of *-a* in impersonal constructions.

- b. Na Beatles se o-mdl-é-va-l-o. (Czech)
 on Beatles self about-faint-TH-SI-1-3.N.SG
 'People fell into a faint at Beatles concerts/the Beatles concert'
 c. #Ale nikdo neomdlel. (Czech)
 but nobody NEG.faint.PTCP.3.M.SG
 'But nobody fell into a faint.'

As to (non-)simultaneity of the events and the number of entities affected by the particular event, it depends on lexical semantic properties of the specific predicate, world knowledge and the appropriate context. For instance, given properties of the 'die' predicate in (20-b), there must be more individuals that undergo the event of dying. In contrast, (21-b) is also true if there is only one person who fainted at several Beatles concerts. The events of fainting are then necessarily non-simultaneous. However, if more individuals undergo the event of fainting at the same Beatles concert, the events can also be simultaneous.

This section is summed up in table 3. The theme *a*- licenses the reflexive *se* 'self', so it licenses impersonal constructions with unaccusative predicates and brings unaccusatives closer to agentive predicates. It again brings about iterativity and in certain cases also non-simultaneity of the iterated events and plurality of the entities undergoing the specific event.

More generally, it was shown that participial adjectives, motion verbs and impersonal constructions share the following commonalities. They contain the theme *a*-, which expresses the iteration of the event denoted by the stem and in certain cases it also brings about non-simultaneity of the events and plurality of the affected argument. The theme also marks changes in the argument structure behavior. Specifically, it is puzzling that in the case of unaccusative participial adjectives, it licenses the "transitive" *-n/t*, analogously to transitive predicates. In motion verbs, it licenses an agent, i.e. marks unergativity. Finally, in the case of impersonal constructions, *a*- surprisingly licenses the reflexive *se* 'self' with unaccusatives, analogously to agentive predicates (unergatives and transitives).

2 THE THEME *A*- AND ITERATIVITY

The preceding sections showed that in the relevant cases, the theme *-a* induces the iterative interpretation of the base predicate. For this reason, I assume that it can spell out an iterative head introducing the iterative operator. The meaning of this operator is depicted in (22). It takes the stem predicate *P* and forms an iteration set *E* with the plural cardinality, i.e. there must be at least two events *e* with the property *P*. It also holds that all events in the iteration set have the property *P*.

- (22) $[[\text{ITER}]] = \lambda P \lambda E \exists e. P(e) \wedge e \in E \wedge |E| > 1 \wedge \forall e'. e' \in E \rightarrow P(e')$
 (to be refined)

At this point, one might ask whether it is necessary to enrich the meaning of the operator and add some restrictions on plurality of arguments and on non-simultaneity or temporal non-adjacency of the iterated events (as discussed e.g. by Lasersohn 1995, Wood 2007, Henderson 2017, Kuhn 2019, Biskup 2024, to appear). The answer is negative because it was shown in preceding sections that plurality of arguments – or the number of entities

affected by the particular event – and non-simultaneity of the iterated events are not inherent in specific predicates. There are also other factors in play.

For instance, examples (23-a) and (23-b) have the identical verb with the iterative *-a* (lengthened by the present tense) but they differ in the interpretation because of the distinct prepositional phrases. The preferred interpretation of (23-a) features non-simultaneity and temporal non-adjacency of the iterated running events, which happen e.g. every workday morning (see e.g., Lasersohn 1995). In contrast, (23-b) prefers the temporally adjacent interpretation, according to which the referent of Jirka runs here and there without pauses. This interpretation is similar to the progressive interpretation in the fact that the (macro)event is not completed (if progressivity is treated as partitivity) and that the reference time – and the speech time here, too – are included in the event time. However, it differs from the progressive in the fact that there are more events of running, which form the iteration set *E* in (22). The reference time (equal to the speech time in (23-b)) is, in fact, included in the overall time of the iteration set *E*, which means that some (but not all) of the running events can already be completed.

- (23) a. Jirka běh-á do školy. (Czech)
 Jirka.NOM run-TH.3.SG to school
 'Jirka runs to school.'
 b. Jirka běh-á po hřišti. (Czech)
 Jirka.NOM run-TH.3.SG on playground
 'Jirka is running here and there in the playground.'

Sentence (23-b) is also true if some of the running events in the iteration set are not temporally adjacent (Jirka can take a short break). In addition to these possibilities, the sentence can also be interpreted generically.

Regarding plurality of arguments, it was shown in §1.2 that this property depends on the lexical meaning of the predicate and the appropriate argument. For instance, since one hair cannot fall out more than once under normal circumstances, a plural form is necessary to satisfy the iterative predicate, as shown in (24-a). In contrast, a pipe can crack several times, hence the argument can have the singular form, as in (24-b).

- (24) a. Vy-pad-a-n-é vlas-y. (Czech)
 out-fall-TH-n/t-PL hair-M.PL
 'Hair loss.'
 b. Po-prask-a-n-é potrubí. (Czech)
 on-crack-TH-n/t-PL pipe.N.SG
 'A pipe with several cracks.'

For the same point, recall the discussion of impersonal constructions in §1.4 and the difference between predicates 'to die' and 'to faint'. To conclude, no temporal conditions or conditions on participants of the events should be added to the meaning of the iterative operator in (22).

The iterative *-a* typically occurs with momentaneous stems, as in *prask-a-t* 'to crack', *bod-a-t* 'to stab' etc., which are atomic, i.e. quantized, since they do not have a proper part with the same property. *-A* also imperfectivizes prefixed predicates (and iterates the denoted event), as in *u-mír-a-t* 'to (be) die(ing)' and *o-mdl-é-va-t* 'to (be) faint(ing)' in (20-b) and (21-b), respectively. The prefixed predicates *u-mřít* 'to die' and *o-mdlít* 'to faint' are perfective; hence they can be also treated as quantized. Given this, the final version of the iterative operator with its quantization selection property looks like (25).

$$(25) [[\text{ITER}]] = \lambda P_{\text{QUA}} \lambda E \exists e. P(e) \wedge e \in E \wedge |E| > 1 \wedge \forall e'. e' \in E \rightarrow P(e')$$

The operator takes a predicate of events that needs to be quantized (*P_{QUA}*) and given the second conjunct in its denotation, with the cardinality of *E* greater than 1, the operator functions like a plurality filter (see e.g. Kuhn 2019). The effect of the quantization

restriction is similar to the effect of the perfective selection property of the secondary imperfective suffix in other approaches. Note, however, that *-a* is not a pure imperfective marker even if it imperfectivizes the perfective base predicate, as in *o-mdl-é-va-t* 'to (be) faint(ing)'. If a superlexical prefix like the distributive *po-* is added, which – with its perfective feature – is closer to the aspectual head than the iterative head with its imperfective feature, the predicate with *-(v)a* will become perfective, as *po-o-mdl-é-va-t* 'to faint one after another'. This is in accord with the two-tiered aspectual system. Having the iterative part of the theme *-a* completed, let us turn to its morphosyntactic properties.

3 MORPHOSYNTACTIC ANALYSIS

It was shown that in motion verbs and participial adjectives, *-a* functions like a theme that verbalizes the acategorial root. Consider (26), in which the (a) examples contain (previously discussed) roots homophonous to nouns, and in which the (b) examples show corresponding verbs with the suffix *-a*.⁸ For this reason, I assume that in addition to the head with the iterative operator (25), *-a* can spell out the verbalizing head *v*.

- (26) a. let / prásk / pád (Czech)
 fly / crack / fall
 'a flight'/'a bang'/'a fall'
 b. lét-a-t / prask-a-t / pad-a-t (Czech)
 fly-TH-INF / crack-TH-INF / fall-TH-INF
 'to fly'/'to crack'/'to fall'

Further, it was shown that the vowel *-a* also functions as a secondary imperfective suffix in impersonal constructions with predicates *u-mír-a-t* 'to die' and *o-mdl-é-va-t* 'to faint' in (20-b) and (21-b), and in participial adjectives like *po-roz-kvét-a-n-é* 'in blossom' in (7-b). It has been argued that secondary imperfective predicates have more meanings (e.g., Comrie 1976, Östen Dahl 1985, Filip 1999, Dickey 2000) and that the iterative secondary imperfective suffix differs from the progressive imperfective suffix not only in the meaning but also in morphosyntactic properties (Biskup 2025). In the examples under discussion, the secondary imperfective *-a* brings about the iterative meaning but the vowel can also induce the progressive (partitive) meaning, as illustrated in example (27), in which the referent/speaker certainly is not dead yet and in which the meaning of the predicate excludes the iterative interpretation. This means that the theme *-a* can also spell out the iterative and the progressive head with their corresponding meanings.

- (27) U-mír-á-m. (Czech)
 at-die-TH-1.SG
 'I am dying.'

In impersonal constructions, the reflexive *se* 'self' blocks the presence of the agent argument in both unergatives, as in (28), and transitives, as in (29), which are based on the grammatical impersonals in (18) and (19). This holds for both perfective (prefixed) and imperfective (unprefixed) verbs.

- (28) *Dítě (do-)pracova-l-o se. (Czech)
 child to-work-l-3.N.SG self
 [Intended] 'People worked.'/'People finished working.'
 (29) *Dítě (do-)čet-l-o se. (Czech)
 child to-read-l-3.N.SG self
 [Intended] 'People read.'/'People finished reading.'

Unaccusative verbs do not form impersonal constructions, as shown in (20-a), repeated

⁸The nouns in (a) examples contain the null nominalizing *n* in contrast to cases as *let-ec* 'pilot'.

as (30-a). However, the imperfectivizing *-a* licenses the reflexive *se* with unaccusative predicates, as demonstrated in (20-b), repeated below as (30-b). The control example in (30-c) shows that without the reflexive *se*, the unaccusative verb is grammatical.

- (30) a. *U-mře-l-o se na covid. (Czech)
 at-die-l-3.N.SG self on covid
 [Intended] 'People died of covid.'
 b. U-mír-a-l-o se na covid. (Czech)
 at-die-TH-l-3.N.SG self on covid
 'People died of covid.'
 c. U-mře-l-o na covid. (Czech)
 at-die-l-3.N.SG on covid
 'It died of covid.'

This relation between agentivity, *se* and *-a* suggests that the theme vowel has to do with the voice, i.e., that it can also realize the Voice head. It was shown that Voice can be either agentive, as in the case of motion predicates as *lét-a-t* 'to fly', or expletive, which semantically, does not introduce a real agent argument, but licenses the reflexive *se* morphosyntactically (see Alexiadou et al. 2015 for discussion of the expletive Voice). Since impersonal predicates like *umír-a-lo se* in (30-b), and passive participial adjectives as *porozkvét-a-né* 'in blossom' in (7-b) are not agentive semantically, the theme *-a* spells out the expletive Voice in such cases. In formal semantics terms, the expletive Voice can be treated as an identity function, as in (31); see Wood (2014). Syntactically, the expletive Voice head has the selection feature D – selecting a DP – which is responsible for merging the expletive *se* in the specifier position (Alexiadou et al. 2015). As to the unaccusative Voice, present e.g. in (30-c), I assume that the head is identical to the expletive Voice in (31) semantically, i.e. it denotes the identity function and does not introduce the agent argument. In addition, the unaccusative Voice lacks the selection feature D, hence it does not license the expletive *se* 'self' in its specifier, in contrast to the expletive Voice.

$$(31) \quad [[\text{Voice}_{\text{expl}}]] = \lambda P \lambda e. P(e)$$

There is not a dependency between the type of Voice and iterativity – i.e. the presence of IterP with the iterative operator – since the iterative interpretation can occur with both the agentive Voice, as in *lét-a-t* 'to fly', and the expletive Voice, as in *umír-a-lo se* 'people died'. In addition, the presence of Voice – realized by *-a* – is not dependent on the presence of IterP since e.g. *děl-a-t* 'to (be) do(ing)', with the agentive Voice, can have the progressive interpretation, which is encoded in ProgP (and IterP is absent in such a case).

Taken together, the theme *-a* is a multifunctional element, which can fulfill different tasks, i.e., it can spell out various verbal heads. *-A* seems to be the default theme in Slavic. It functions as a verbalizing marker, an iterative marker, or generally as a secondary imperfective marker, as a conjugation marker and in North Slavic, it also functions as a habitual marker. In the Distributed Morphology approach, such markers are treated as underspecified.⁹ Given the flexibility of the *-a* theme, I take it to be fully underspecified, as shown by the vocabulary item in (32). I take up the weakest position here and assume that it is an elsewhere marker that can be inserted in any head unless it is blocked by a more specific vocabulary item, as will be shown for some prefixes and participial markers.

$$(32) \quad -a \leftrightarrow []$$

Since there can be only one *-a* for several heads, it leads to the view that one marker can spell out more terminals; see spanning in Abels & Muriungi (2008), Ramchand (2008), Julien (2015), Merchant (2015), Haugen & Siddiqi (2016), Caha & Ziková (2016)

⁹In contrast, in the approach of Nanosyntax (Starke 2009), such elements are overspecified. For differences and discussions of relevant consequences, see e.g. Haugen & Siddiqi (2016) and Caha (2018).

and Wiland (2019). E.g., in *lét-á-š* ‘you fly’, *-á* is a portmanteau morpheme that spells out five distinct heads: the verbalizing *v*, the iterative head, the agentive Voice, the imperfective aspectual head and the tense head (if the present tense – the vocalic length – is treated as a floating mora realized on the preceding vowel in cases like *lét-á-š*), as shown by the correspondence between (33) and (34). For ease of exposition, I only use bracketed structures with heads, in which colors indicate the relation between a head and its spellout, i.e. the corresponding marker. The bracketed structure results from head movement.

- (33) *lét-á-š*
 (34) $[[[[[[\sqrt{lét}] v] \text{Iter}] \text{Voice}_{\text{agent}}] \text{Asp}_{\text{ipf}}] \text{T}_{\text{pres}}] \text{Agr}_{\text{2sg}}$

The iterative semantics, of course, can be missing, as in (35) and (36), with *děl-á-š* ‘you do’. There, the theme vowel spans only four heads, as illustrated in the bracketed structure (36).

- (35) *děl-á-š*
 (36) $[[[[[[\sqrt{děl}] v] \text{Voice}_{\text{agent}}] \text{Asp}_{\text{ipf}}] \text{T}_{\text{pres}}] \text{Agr}_{\text{2sg}}$

It is known that Czech (and Slovak) productively use a specialized habitual morpheme, which is also realized by *-a* (or *-va* to resolve hiatus; see e.g. Filip 1999, Esvan 2007, Nübler 2017); consider *děl-á-vá-š* ‘you tend to do’ in (37). Since the habitual projection is placed between the morphological aspect projection and the tense phrase (Biskup 2023), the floating mora of the present tense attaches to the *-a* that spells out the habitual head, as is obvious from (38) and from the comparison with the non-lengthened past participle *děl-á-va-l* ‘he tended to do’.¹⁰ Thus, the theme *-a* shrinks further and spells out only three heads, as illustrated in (38).

- (37) *děl-á-vá-š*
 (38) $[[[[[[\sqrt{děl}] v] \text{Voice}_{\text{agent}}] \text{Asp}_{\text{ipf}}] \text{Hab}] \text{T}_{\text{pres}}] \text{Agr}_{\text{2sg}}$

Since in habitual predicates as (37), the habitual head is adjacent to the aspectual head but there are two *-a* markers, spanning cannot be operative here and there must be two distinct vocabulary items. Specifically, the habitual *-a* differs from the theme *-a* in the fact that it is specified for the [habitual] feature, as shown in the vocabulary item (39). Thus, it matches the *Hab* head, which is assumed to bear the [habitual] feature. Given the Subset Principle and the Specificity Principle (e.g., Embick & Noyer 2007), the habitual *-a* in (39) wins over the elsewhere marker of the vocabulary item (32), which could span to *Hab*, too. The habitual vocabulary item could be directly specified for the head, as in (40). Given the assumption that the habitual head is the only terminal with the [habitual] feature, the *-a* in (39) can only be inserted at the habitual head and the two vocabulary items in (39) and (40) derive the same result. The difference is that (39), in connection with (32), clearly states that there are two distinct exponents *-a*.

- (39) *-a* \leftrightarrow [hab]
 (40) *Hab* \leftrightarrow *-a*

So far, we have discussed the spellout of the agentive Voice but the theme *-a* can also realize the expletive Voice, as mentioned with respect to the two puzzling phenomena: impersonal constructions as *umír-a-lo se* ‘people died’, and participial adjectives as *porozkvét-a-né* ‘in blossom’. For instance, the impersonal predicate *omdle-va-lo se* ‘people fainted’ from (21-b) is analyzed as shown in (42).¹¹ The theme *-a* spells out only

¹⁰The habitual head standardly also lengthens the preceding vowel, as is the case in (37).

¹¹I treat lexical prefixes as prepositions that project the pP complement and then incorporate in the root (which is then verbalized). In contrast, superlexical prefixes head a corresponding phrase in a higher clausal structure, as will be shown for the delimitative or distributive prefixes.

three heads since the *v* head is realized by the theme *-e* and from above, the span of *-a* is restricted by the participial head spelled out as *-l*. Given the fully underspecified character of the theme *-a*, this suffix also spells out the expletive Voice, which has the property that it cannot introduce an agentive DP in its specifier but can license the expletive *se* there.

- (41) o-mdl-é-va-l-o se
 (42) [[[[[[[[P] *p*] √mdl] *v*] Iter] Voice_{exp}] Asp_{ipf}] Part] Agr_{3sg}]

It was shown in §1.3 that the theme *-e* contrasts with the theme *-a* and that it is typical for unaccusative predicates. For the insertion of *-e* in cases as (41), the theme needs to be more specific than the underspecified *-a* in (32).¹² Not all unaccusatives take the theme *-e*, e.g. *zrá-t* 'to ripen' has a null theme. Thus, to derive (41), it is reasonable to specify the vocabulary item as in (43), with *-e* as an exponent for a set of roots including √mdl. Given this, *-e* is more specific than the *-a* allomorph and blocks it from appearing in the head *v* in (41).

- (43) *v* ↔ -e/X__; X=Roots: √mdl,...

The span of the theme *-a* is restricted not only from below and above, as already shown, but it can also be interrupted by an intervening head that is more specific than the underspecified *-a*. Consider example (44), showing that, in fact, there are two types of the iterative head *-a* in verbal structure: internal and external. This is in line with findings of Cusic (1981), Lasersohn (1995), Chrakovskij (1997), Landman (2000), Wood (2007), Bertinetto & Lenci (2012) and Kuhn (2019), among others, who argue that there is event-external and event-internal pluractionality. Concretely, aspectual and semantic properties show that the delimitative *po-* scopes over the internal iterative *-a*, i.e., it perfectivizes and temporally delimits the base iterative predicate; compare (44-a) with (44-b). The external iterative *-a*, in turn, scopes over the delimitative prefix. It imperfectivizes the predicate again and iterates the temporally delimited iteration set, as shown in (44-c).

- (44) a. Plác-a-t^{IPF}. (Czech)
 pat-ITER_{INT-^{INF}}
 'To pat repeatedly.'
 b. Po-plác-a-t^{PF}. (Czech)
 on-pat-ITER_{INT-^{INF}}
 'To pat repeatedly for a while.'
 c. Po-plác-á-va-t^{IPF}. (Czech)
 on-pat-ITER_{INT-^{INF}}-ITER_{EXT-^{INF}}
 'To pat repeatedly for a while several times.'
 d. Plác-a-t^{IPF}. (Czech)
 pat-TH-^{INF}
 [Impossible] 'To pat repeatedly for a short time several times.'

That means that the prefix structurally (but not linearly) intervenes between the two iterative heads, which can be spelled out by the fully underspecified *-a*. I assume that the delimitative *po-* is specified for the [delimitative] feature, as shown by the vocabulary item (45). At the same time, the delimitative head of verbal structure bears the [delimitative] feature, as the only one. The underspecified *-a* could be inserted at the delimitative head in (44-c) but *po-* in (45) is more specific and blocks the insertion of *-a*. If *-a* spelled out the delimitative head, then there would be one *-a* span without *po-*, as in (44-a), and the form should also have the meaning of (44-c). However, this is not possible, as shown by (44-d). Thus, a structurally intervening head (*po-* in (44-c)) can "cut" a span (of *-a* in the case under discussion) and consequently two homophonous markers

¹² After insertion of *-e*, the morphophonology must operate and lengthen it to *-é* in (41).

appear (plus the hiatus resolving *-v-* between them in (44-c)). In other words, if spans are head-complement sequences (e.g., Abels & Muriungi 2008, Merchant 2015) and the spanning process is of pre-linearization nature, then intervening heads linearized as prefixes will also block it. The delimitative head can also be directly specified for *po-*, as in the alternative vocabulary item (see below), which takes precedence over the item (32), with the underspecified *-a*.

- (45) *po-* \leftrightarrow [del]

- (46) *Del* \leftrightarrow *po-*

To be more specific about the structure, the second singular form of the predicate in (44-c) is spelled out as in (47). If the delimitative vocabulary item with the *po-* exponent looks like (45), then *po-* can only be inserted at *Del*. It cannot span since the next higher head – the external iterative one – does not have the [delimitative] feature and the Subset Principle disallows the insertion of *po-* in *Iter_{ext}*. Thus, *-a* appears again given its elsewhere nature and since there are not more specific vocabulary items, *-a* spans the following heads: external Iterative, agentive Voice, imperfective Aspect and the present Tense.

- (47) *po-plác-á-vá-š*

- (48) $[[[[[[[[\sqrt{\text{plác}}] v] \text{Iter}_{\text{int}}] \text{Del}] \text{Iter}_{\text{ext}}] \text{Voice}_{\text{agent}}] \text{Asp}_{\text{ppf}}] \text{T}_{\text{pres}}] \text{Agr}_{\text{2sg}}$

Generally, the secondary imperfective *-a* is the external iterative head, as shown in (44-c) and (48), whereas the theme *-a* in momentaneous predicates as *plác-a-t* ‘to tap’ represents the internal iterative operator (in light blue in (48)), which forms the plural counterpart of the singular *-nou* verbs based on identical roots as *plác-nou-t* ‘to tap once’.

Attaching the delimitative *po-* to motion verbs like *lét-a-t* ‘to fly’ shows that in such verbs, *-a* realizes the internal iterative head (analogously to momentaneous predicates) since the delimitative prefix scopes over it semantically and aspectually. Consider the prefixed example (49-b), in which *po-* perfectivizes and temporally delimits the base predicate (49-a), denoting iterated events of flying.

- (49) a. Lét-a-t^{IPF}. (Czech)
 fly-ITER_{INT}-INF
 ‘To fly repeatedly.’
- b. Po-lét-a-t^{PF} si. (Czech)
 on-fly-ITER_{INT}-INF self.DAT
 ‘To fly repeatedly (in various directions) for a while.’

In contrast, in participial adjectives like *porozkvét-a-né* ‘in blossom’ in (7-b), the secondary imperfective *-a* spells out the external iterative head, in addition to the verbalizing *v* and the expletive Voice; consider (50)/(51).

- (50) *po-roz-kvét-a-Ø-n-é*

- (51) $[[[[[[[[[P] p] \sqrt{\text{kvét}}] v] \text{Iter}_{\text{ext}}] \text{Voice}_{\text{expl}}] \text{Dist}] \text{Asp}_{\text{pf}}] \text{Part}] a]$

The distributive superlexical *po-* is structurally higher than the external iterative head (but is linearized as a prefix), as is obvious from the fact that it perfectivizes the secondary imperfective stem (i.e. values the aspectual feature of the aspectual head as perfective). The prefix is specified for the [distributive] feature, as in (52); hence it matches the distributive head, which bears the corresponding [distributive] feature by assumption. The vocabulary item (52) makes the distributive *po-* more specific than the fully underspecified *-a*. For this reason, the distributive *po-* is inserted at *Dist* and blocks spanning of *-a*. Again, the distributive head could be directly specified for *po-*, as in the item (53).

- (52) *po-* \leftrightarrow [dist]

- (53) Dist ↔ po-

If *-a* could be inserted at Dist, then the participial adjective *roz-kvét-a-n-é* should have the same meaning as *po-roz-kvét-a-n-é* 'in blossom'. The form *roz-kvét-a-n-é*, however, is not well-formed, as already shown in (7-b).

Contrary to the expectations, the participial head of the unaccusative stem is spelled out as *-n/t* in *porozkvét-a-né* 'in blossom'. The reason is the presence of the expletive Voice. However, it is not the only reason since there is also the necessity of the presence of the internal argument. For instance, when the ungrammatical unergative predicate from (54-a) is prefixed, as in (54-b), i.e. when a *pP* complement able to introduce an internal argument is added to it, the predicate becomes grammatical.

- (54) a. Pracovaný sval. (Czech)
 worked muscle
 [Intended] 'A worked muscle.'
 b. Vy-pracovaný sval. (Czech)
 out-worked muscle
 A well-defined muscle.'

Because of these properties, vocabulary insertion should insert the *-n/t* exponent at the participial head merged with a predicate with an internal argument and the expletive or agentive Voice.¹³ In other words, the "transitive" *-n/t* marker is sensitive to morphosyntactic transitivity, not to semantic transitivity, because it is also satisfied with the presence of the expletive Voice.

At this point, the question arises as to why two prefixes are necessary in participial adjectives as *po-roz-kvétané*; i.e. why *-n/t* needs a perfective stem in contrast to *čtená* 'being read' in (2-a), in which *-n/t* is attached to an imperfective stem. The rationale is that if the unaccusative stem is perfective, then it avoids the competing *-icí* participial adjective, which is the Czech counterpart of the English active *-ing* participle and which is formed from all types of verb classes. That is, imperfective unaccusative stems with *-ný/tý* as **rozkvéta-né*, **pada-né* are ungrammatical because they are blocked by the imperfective unaccusative *-icí* adjectives as *rozkvéta-jící* 'blossoming' and *pada-jící* 'falling'.¹⁴

What is behind this phenomenon is the difference between unaccusative and transitive predicates. Since transitives have two arguments, the two types of participial adjectives are aligned with the two arguments: *-ný/tý* adjectives with the internal argument and *-icí* adjectives with the external argument, as shown in (55).¹⁵ While *-icí* participial adjectives are only formed from imperfective predicates (giving rise to the active ongoing interpretation, as in (55-c)), *-ný/tý* adjectives are formed from both imperfectives (giving rise to imperfective passive interpretations, most prominently to the progressive one), as in (55-a), and perfectives (resulting in the resultative passive interpretation), as in (55-b).

- (55) a. Děl-a-n-ý. (Czech)
 do-TH-n/t-M.SG
 'Being done.'
 b. U-děl-a-n-ý. (Czech)
 at-do-TH-n/t-M.SG
 'Done.'
 c. Děl-a-jíc-í. (Czech)
 do-TH-íc-M/F/N.SG/PL
 'Doing.'

¹³For simplicity, I leave aside the difference between the allomorphs *-n* and *-t*.

¹⁴As pointed out by a reviewer, it is possible to find *padaná jablka* 'literally: fallen apples' but here the passive participle probably denotes a kind of apples. This exceptional behavior of imperfective passive participles is typical for cases referring to kinds; compare e.g. the transitive *vařená rýže* 'boiled rice'.

¹⁵As a hiatus resolution, the glide /j/ occurs between *-a* and *-ic* in (55-c).

Crucially, since unaccusatives only have one argument, the two participial adjectives cannot be aligned with arguments. Instead, the two values of the morphological aspect are used. Specifically, *-íci* adjectives are again formed from imperfectives (inducing the progressive interpretation), as in (56-a), whereas *-ný/tý* adjectives can only be derived from perfective stems (giving rise to the resultative interpretation), as shown in (56-b), in which the prefix perfectivizes the predicate. The ungrammatical control examples **puk-a-n-é* and **roz-puk-a-jic-í* show that the reversed derivations are ungrammatical.

- (56) a. Puk-a-jic-í. (Czech)
 crack-TH-íC-M/F/N.SG/PL
 'Cracking'
 b. Roz-puk-a-n-é. (Czech)
 apart-crack-TH-n/t-M/F.PL
 'Cracked'

This explains why it is necessary to attach the second, perfectivizing prefix to secondary imperfective unaccusatives as **rozkvétané*. The consequence is that there should be two *-n/t* vocabulary items, as shown in (57) and (58). The first one is for the participial head of transitives, which can co-occur with both morphological aspects and which have the agentive Voice and a *pP* introducing the internal argument, as indicated by the selection features of Part in (57). This Part head can occur in both *-n/t* verbal participles, as in (59-a), and *-n/t* participial adjectives, as in (59-b) (see also examples (55-a) and (55-b)).

- (57) *-n/t* ↔ Part [s: Voice_{agent}, *p*]
 (58) *-n/t* ↔ Part [s: Voice_{expl}, *p*, pf.]/a
 (59) a. (Pře-)čt-en. (Czech)
 over-read-n/t.M.SG
 [Unprefixed] 'Being read' / [Prefixed] 'Read through'
 b. (Pře-)čt-en-ý. (Czech)
 over-read-n/t.M.SG
 [Unprefixed] 'Being read' / [Prefixed] 'Read through'

The second vocabulary item with the *-n/t* exponent is meant for the puzzling forms based on unaccusative roots as *po-roz-kvét-a-né* 'in blossom'. As already discussed, such forms are restricted to the perfective aspect and the expletive Voice. Hence, their participial head has corresponding selection features, as illustrated in (58), and selects a complement with the incorporated expletive Voice head, the incorporated prepositional head *p* and the perfective Asp. Therefore, the examples with an imperfective base are ungrammatical, irrespective of whether it is a secondary imperfective form containing a prefix, as **roz-kvét-a-n-é*, or an unprefixed imperfective predicate as **puk-a-n-é*.

It is necessary to add the structural context in the vocabulary item (58), requiring the adjacency to the adjectival head, since this *-n/t* allomorph can only occur in participial adjectives and cannot occur in verbal *-n/t* participles (which do not have the adjectival head but have the Agr(eement) projection instead), as demonstrated in (60). The ungrammatical verbal participle in (60-a), with the Agr exponent *-y*, contrasts with the grammatical participial adjective in (60-b), with *-é* spelling out the adjectival head. In this case, the adjacency relation could be structural or linear since *aP* immediately dominates *PartP* and the exponent of *a* immediately follows the exponent of *Part*.

- (60) a. *Po-roz-kvét-á-n-y. (Czech)
 on-apart-blossom-TH-n/t-F.PL
 [Intended] 'Being brought to blossom'
 b. Po-roz-kvét-a-n-é. (Czech)
 on-apart-blossom-TH-n/t-M/F.PL
 'In blossom'

If the analysis is on the right track, then participial adjectives with *-lý* differ from *-ný/tý* participial adjectives formed from the unaccusative stem only in the fact that they have the unaccusative type of Voice (not the expletive one). Example (61), based on (1), shows that resultative *-lý* adjectives are derived from unaccusative, perfective stems, as in (61-a), and that they cannot be formed from imperfective predicates, as in (61-b) and (61-d), or agentive predicates, as in (61-c) and (61-d).

- (61) a. Roz-kvet-l-ý strom. (Czech)
 apart-blossom-l-M.SG tree.M.SG
 'A tree in blossom.'
- b. *Kvet-l-ý strom. (Czech)
 blossom-l-M.SG tree.M.SG
 [Intended] 'A tree in blossom.'
- c. *Pře-čet-l-á kniha. (Czech)
 over-read-l-F.SG book.F.SG
 [Intended] 'A book that was read through.'
- d. *Čet-l-á kniha. (Czech)
 read-l-F.SG book.F.SG
 [Intended] 'A book that was read.'

The vocabulary item with the *-l* exponent for *-lý* participial adjectives is in (62). It shows that vocabulary insertion inserts *-l* at the participial head with selection features [Voice_{unacc}], [perfective] and [p].

- (62) -l ↔ Part [s: Voice_{unacc}, p, pf.]/__ a

As to the resultative interpretation of *-lý* participial adjectives, it is based on the presence of the stativizing operator in *a*, which existentially binds the state variable introduced by the lexical prefix (Biskup 2019). In Biskup (2019), the perfectivity restriction of *-lý* participial adjectives and resultative *-ný/tý* participial adjectives is a side effect of the presence of the stativizer (which needs a state variable, which is introduced by the prefix/preposition). However, the proposal is problematic in the light of ungrammatical cases like **roz-kvét-a-né*. They have the state variable introduced by the prefix and the suffix *-a* can iterate e.g. the complex event of blossoming. Hence, one would expect such forms to be grammatical despite their imperfective property. From this, it follows that an independent aspectual selection, e.g. as in (62), is necessary.

Verbal *-l* participles do not have the restrictions of *-lý* participial adjectives. They can be derived from all verb classes, as shown by the unaccusative *vypadala* 'they fell out' in (4-a), the transitive *naběhalo* 'they ran (5 km)' in (8-c) and the unergative *pracovalo se* 'people worked' in (18-a). In addition, they can be both perfective, as *vypadala*, and imperfective, as *pracovalo se*. Thus, it seems that *-l* is the default allomorph of the participial head. In order not to block the *-l* allomorph from occurring in Part of transitive *-l* participles by the *-n/t* vocabulary item in (57), I add the structural context in the item of *-l*; consider (63). It is based on the fact that verbal *-l* participles occur in complex tenses that include auxiliaries. The auxiliaries presumably merge in the T(ense) head and in this respect differ from the verb 'be' used with *-n/t* participles (e.g. in passive constructions).

- (63) -l ↔ Part/__ Agr & T

In addition to the adjacency between Part and Agr, the vocabulary item in (63) also requires adjacency between Agr and T. Crucially, this adjacency relation should be structural since the two heads do not form a word and other words (e.g. clitics and adverbs) can linearly occur between the auxiliary and the *-l* participle. This restriction is not problematic because all three heads – Part, Agr and T – are spelled out in the same phase and spellout can provide (bracketing) information on structural properties.

4 CONCLUSIONS

The theme vowel *-a* is a multifunctional morpheme, which can fulfill the following tasks. It verbalizes; it can express the iterative or progressive meaning and it can realize the Voice projection. In case of participial adjectives, motion verbs and impersonal constructions, the theme *-a* brings about the iteration of the event denoted by the predicate. Further, it brings about several argument structure effects: It licenses *-n/t* in unaccusative participial adjectives analogously to transitive predicates; it licenses an agent in non-directed motion verbs; and in impersonal constructions, it licenses the reflexive *se* 'self' analogously to agentive predicates. It was shown that there are internal and external iterative projections and that there is also an expletive Voice. Thus, the iterative and argument structure effects of the theme *-a* result from the fact that the marker can realize the iterative heads and the agentive and expletive Voice. The two puzzling phenomena – unaccusative impersonal constructions and unaccusative participial adjectives with *-n/t* – are derived by means of the expletive Voice. The theme *-a* is treated as an elsewhere marker, which can span several heads. The size of the span depends on the presence/absence of other heads in structure and on featural specification of particular heads. Given that there is a direct relation between the event denoted by the verb stem and the entities affected by the event, in specific cases, verbal plurality (iterativity) is mapped on plurality in the argument domain. This property, however, is not an inherent property of the iterative operator. Also, simultaneity and temporal adjacency of the iterated events are not encoded in the meaning of the iterative operator. Further, it was shown that *-n/t* does not mark semantic transitivity; it only signals morphosyntactic transitivity.

ABBREVIATIONS

		M	masculine
3	third person	N	neuter
DAT	dative	NOM	nominative
F	feminine	XXX ^{PF}	perfective
INF	infinitive	PL	plural
INT	int...	PTCP	participle
XXXX ^{IPF}	imperfective	SI	secondary imperfective
ITER	iterative	SG	singular
		TH	theme vowel

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