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## ACTION NOMINAL CONSTRUCTIONS AND THEIR USE IN A SWEDISH COVID-19 CORPUS

### 1. INTRODUCTION

The present study addresses action nominal constructions (ANCs) (Koptjevskaja-Tamm) or complex event nominals (Grimshaw, *Argument Structure*, “Deverbal Nominalizations”) in which a deverbal noun appears along with at least one additional dependent element. In Swedish, there are two main types of productive ANCs, compounding (or incorporating, e.g. *virusbekämpande* ‘virus-fighting’) and phrasal (or nominal, e.g. *spridning av virus* ‘spreading of virus’), which include either of the native suffixes *-ande/-ende* or *-(n)ing* (Koptjevskaja-Tamm).<sup>1</sup> This study investigates these two ANC types within a lexeme-based framework (Gaeta, “Lexeme Formation”, “How Lexical is Morphology?”) based on corpus data of contemporary Swedish. In order to assess the relative productivity of nominalisation patterns and identify emerging word-formation patterns in use, corpus data are essential.

Meinschaefer gives an overview of the research on deverbal nominalisation, which, to a large extent, has been conducted within the Distributed Morphology

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<sup>1</sup> In addition, to use the verb stem alone as a deverbal noun is a productive word-formation device in Swedish (Teleman 70), often involving intransitive verbs (Thorell 76) and denoting instruments (Söderbergh 79). Loman and Koptjevskaja-Tamm exclude this device from their studies on action nominals, and so does the present study. Tenev, however, claims it to be the third most productive pattern for deverbal nouns in Swedish.

(DM) framework. In DM, where morphological derivation takes place in the syntax, Chomsky's distinction between syntactically or lexically derived nominalisations is a question of functional structure, more complex for syntactic nominalisations than for lexical ones (Meinschaefer). In a lexeme-based approach, the distinction would instead be a matter of syntactic versus morphological formations. In view of the present study, deverbal nouns (as parts of ANC's or not) are morphological constructs and contain a verb lexeme, specified for argument and event structure (e.g. Fradin). Accordingly, issues such as whether deverbal nominals have nominal or verbal properties, and how these properties relate to each other (Grimshaw, "Deverbal Nominalizations"; Meinschaefer) are not of major theoretical concern (cf. also Montermini). Rather, the semantic contribution of the affixal process to the construction as a whole is more central (cf. e.g. Gaeta, "On the Interaction").

This study begins with an account of previous theories on ANC's with the aim to position Swedish ANC's within a morphological, lexeme-based approach. However, as the frequency of different ANC types and their realisation of possible arguments in context have tended to be left aside in previous research (cf. Koptjevskaja-Tamm), and since research on nominalisation in Swedish is overall scarce, the main objective of the study is to investigate Swedish ANC's in use. More precisely, the idea that competing forms that express similar semantics can take on different distributional patterns (e.g. Aronoff, "Competition", "Competitors") will be explored for compounding and phrasal ANC's with *-ande/-ende* or *-(n)ing* in a limited set of corpus data. Two research questions are posed:

- To what extent do the suffixes, *-ande/-ende* and *-(n)ing*, occur in compounding ANC's versus phrasal ANC's?
- To what extent and by what means are the arguments of the verbal base expressed in compounding ANC's versus phrasal ANC's?

The study has the following structure. Section 2 provides a theoretical background of ANC's in general and of Swedish ANC's in particular. The corpus data and methodological concerns are described in section 3. Section 4 presents the analysis of the ANC's in the Swedish data, and section 5 gives the conclusion.

## 2. THEORETICAL BACKGROUND

This section starts with an account of ANC's from a cross-linguistic perspective, then turns to ANC's in Swedish and the two nominalising suffixes. Finally, it situates Swedish ANC's within a lexeme-based approach.

## 2.1 ACTION NOMINAL CONSTRUCTIONS

Koptjevskaja-Tamm aims at a cross-linguistic comparison of the internal syntax of ANCs in relation to corresponding finite clauses and ordinary NPs (e.g. retention of argument structure or not). Intending to cover the full range of ANC types, her typological sample includes 70 languages with different nominalisation patterns and grammatical features (i.e. word order in clauses and NPs, and systems of dependent-marking or head-marking). Even closely related languages show different nominalisation patterns, such as Dutch, English, German, Icelandic, and Swedish from the Germanic family (Koptjevskaja-Tamm).

Koptjevskaja-Tamm proceeds from Comrie's definition of action nominals as "nouns derived from verbs (verbal nouns) with the general meaning of an action or a process" (Comrie 178), but she adds "capable of declining or taking prepositions or postpositions in the same way as non-derived nouns, and showing 'reasonable' productivity" (Koptjevskaja-Tamm 5). Hence, Koptjevskaja-Tamm classifies ANCs as lexical nominalisations that refer to propositions, facts, events, or manners, but not results, in contrast to Grimshaw's (*Argument Structure*, "Deverbal Nominalizations") more inclusive classification of deverbal nominalisations as exhibiting a variety of meanings, reflecting those of underived nominals and verbs, such as results, manners, actions, processes, events, states, facts, and propositions. Among event and fact nominals, which are the most verb-like ones, Grimshaw (*Argument Structure*, "Deverbal Nominalizations") distinguishes between simple (e.g. *exam*) and complex event nominals (e.g. *examination*), where only the latter sometimes take arguments (e.g. *the (doctor's) examination of the patient (by the doctor)*). Koptjevskaja-Tamm's ANCs would thus correspond to Grimshaw's complex event nouns, or, more simply stated, the argument-taking event nouns in Borer's terminology.

Across languages, ANCs tend to have an NP-like word order: "of all NPs, it is possessive NPs which serve as a model for ANCs" (Koptjevskaja-Tamm 252). Or, as Grimshaw puts it, deverbal nouns "recruit their morphology and syntax from the nominal system" ("Deverbal Nominalizations" 1305), so to combine with possessives and prepositional complements. Hence, action nominals can be derived from verbs in a regular, productive manner, but still show nominal properties (Koptjevskaja-Tamm 266). Nonetheless, both Koptjevskaja-Tamm and Grimshaw ("Deverbal Nominalizations") assume that ANCs/deverbal nouns retain some syntactic structure of the verb, such as an argument structure that includes external (Arg1) and internal arguments (Arg2),<sup>2</sup> rather than having a pure semantic representation (e.g.

<sup>2</sup> The terms Arg1 (first argument) for the external argument/Actor/Agent and Arg2 (second argument) for the internal argument/Undergoer/Patient/Theme will henceforth be used (cf. Müller and Wechsler).

involving thematic roles). Cross-linguistically, ANCs tend to involve a reduction of valency: ANCs based on transitive verbs typically only express Arg2 (Koptjevskaja-Tamm 261), whereas Arg1 is optional (e.g. *The (doctor's) examination of the patients was a mistake*) (Grimshaw, “Deverbal Nominalizations”); transitive ANCs with two overt arguments are rare (e.g. five out of one hundred in English, according to Hopper and Thompson 285).

## 2.2 PHRASAL AND COMPOUNDING ANCS IN SWEDISH

Swedish is an SVO language with dependent-marking in clauses and NPs. In non-derived NPs, the possessor (genitive) precedes the possessum (Koptjevskaja-Tamm 176), as in (1):

- (1) *hus-et-s tak* ‘house-DEF-GEN roof’, i.e. the roof of the house

According to Koptjevskaja-Tamm (Appendix A), Swedish has nominal and incorporating ANC types (more NP-like and less sentence-like). In the present study, we refer to them as phrasal and compounding ANCs, seeing that both types are nominal in Swedish. In the phrasal (nominal) type, Arg1 genitivises and Arg2 turns up as a prepositional phrase, introduced by *av* ‘of’ (the same order as in finite clauses) (Koptjevskaja-Tamm 61, 207), see (2a–b). With transitive verbal bases, one of the arguments is typically omitted, most often Arg1, as in (2c).

- (2) a. *polis-en grep tjuven* ‘the police arrested the thief’  
 b. *polisens gripande av tjuven* ‘the police’s arresting of the thief’, i.e. the arresting of the thief by the police  
 c. *gripandet av tjuven var dramatiskt* ‘the arresting of the thief was dramatic’

However, according to Loman (2), the preposed genitive can occasionally correspond to the direct object (Arg2) of the corresponding active clause with a transitive verb, as in (3a–b):

- (3) a. *man utrotade sprängörten* ‘one eradicated the cowbane/cicuta virosa’  
 b. *sprängörtens utrotning* ‘the cowbane’s eradication’, i.e. the eradication of the cowbane (by Arg1).

Koptjevskaja-Tamm (207–8) remarks that the Swedish preposition *av* has several uses. Apart from conveying ‘part-whole’ and ‘reason’ relationships, among

others, it also serves to introduce the agent in passive clauses, as in (4a). In this way, transitive ANCs with two overt arguments could potentially be ambiguous, as in (4b) (resembling the ergative-possessive type, Koptjevskaja-Tamm 61).<sup>3</sup> According to older prescriptive grammars (e.g. Noreen), such constructions should be avoided, and in contemporary Swedish, readings of this kind are exceptional (Koptjevskaja-Tamm 208). In addition, as Koptjevskaja-Tamm (177) mentions, in contrast to English, *av*-dependents rarely replace prenominal genitives in Swedish (e.g. *\*ta-cket av huset* ‘the roof of the house’, cf. ex. (1)), so a phrasal ANC such as the one in (4c) would be odd.

- (4) a. *posten övertogs av banken* ‘the post was taken over by the bank’  
 b. *bankens övertagande (av posten)* ‘the bank’s taking over of/by the post’,  
 i.e. the taking over of the post/bank by the bank/post  
 c. *\*övertagandet av posten av banken* ‘the taking over of the post by the bank’

In the compounding (incorporating), ‘valency-lowering’, ANC type, Arg2 is part of the compound, and Arg1 (if present) genitivises (Koptjevskaja-Tamm 61–62), as shown in (5a–b):

- (5) a. *barnen spelar boll* ‘the children play ball’  
 b. *barnens bollspelande* ‘the children’s ball-playing’

The compounding ANC type is productive in Swedish, presumably related to the productivity of NN-compounding (Koptjevskaja-Tamm 89).

### 2.3 SUFFIXES IN SWEDISH ANCS

There are two parallel derivational systems in Swedish, one Germanic and one Romance. The Germanic system penetrates more often into the Romance one, with Germanic suffixes combining with Romance bases (Söderbergh 39–41). The two main suffixes for deriving action nouns from verbs are of Germanic origin:

<sup>3</sup> Koptjevskaja-Tamm (223) suggests that the ergative-possessive type might be the Proto-Indo-European pattern for ANCs. If so, it could be that Swedish is on its way to a shift from this pattern, moving towards compounding/incorporating ANCs.

*-ande/-ende*<sup>4</sup> and *-(n)ing*<sup>5</sup> (Loman; Söderbergh 80–88). Nouns in *-ande/-ende* have neuter gender, whereas those in *-(n)ing* are uter.<sup>6</sup>

Synchronically, deverbal nouns in *-ande/-ende* coincide in form with present participles. Diachronically, the two forms have different origins, since the nominalising suffix *-ande/-ende* is borrowed from the Low German nominalised infinitives in *-en(t)* (Söderbergh 87). Depending on the theoretical position, *V-ande/-ende* can be seen as a case of homophony (the present study, and probably also Loman; Tenev) or syncretism (syntactic approaches to word-formation, such as Josefsson; Lundquist; Thurén).<sup>7</sup> In this study, the word-formation patterns (e.g. [(x)<sub>V</sub> *ande/-ende*]<sub>N,neuter</sub> and [(x)<sub>V</sub> (*n)ing*]<sub>N,uter</sub>) are different from present participles, *V-ande/-ende*, which can be classified as verbs and/or adjectives (cf. Teleman et al. 582–583; Hultman 40; Thurén; Popova and Rosenberg).

According to Loman, forms in *-ande/-ende* exist in principle for all Swedish verbs (see also Teleman et al. 34), whereas nominalisations in *-(n)ing* are more restricted in their formation but predominate in contemporary texts (in Loman's time), partly due to their wider semantic scope. With intransitive base verbs, the use of *-(n)ing* tends to signal a single, individual event while the use of *-ande/-ende* tends to signal that the event is iterative and ongoing and often occurs in pejorative contexts (e.g. *det ständiga visslandet* 'the constant whistling') (Loman 18–19). With transitive bases, *-(n)ing* is the neutral suffix, since it can render concrete, non-eventive meanings as well as eventive meanings, whereas *-ande/-ende* with transitive bases is eventive and more verb-like, and can render abstract meanings (sometimes iterative) (Loman 30). Accordingly, some verbs with an inherently abstract meaning combine only with *-ande/-ende* (e.g. *genomförande* 'realisation'), and there is sometimes a tendency to use the same verbal base with *-(n)ing* to render a concrete meaning, as in (6), and with *-ande/-ende* to render an abstract meaning, as in (7) (Loman).

(6) *samlingens värde* 'the value of the collection'

(7) *samlandets värde* 'the value of collecting'<sup>8</sup>

<sup>4</sup> The alternation is purely formal: *-ende*, the less common variant, is used if the infinitive form ends in a long vowel (Thorell 75).

<sup>5</sup> The alternation is purely formal: *-ing*, the less common variant, appears with verbs ending in *-era*, verb stems ending with *-n* or a consonant + *r/l*, some verbs prefixed by *be-* or *för-*, and some verbs ending with *-göra* (Söderbergh 84).

<sup>6</sup> Swedish nouns have uter or neuter gender; over 70% of all nouns are uter (e.g. Bohnacker).

<sup>7</sup> Teleman et al. (620) are unclear on this point: first, they say that the derivational suffix and the present participle suffix are homonyms, then they mention that an alternative analysis is possible, namely, conversion from present participles to nouns.

<sup>8</sup> As shown by examples (6–7) and as noted also by Lundquist (61), nouns in *-ande/-ende* are more similar to English *-ing* forms, while nouns in *-(n)ing* are more similar to English *-tion* forms.

For some semantic or formal groups of verbs, such as impersonal weather verbs and some reflexive or deponent verbs, nominalisations in *-ande/-ende* are entrenched, and variants in *-(n)ing* are missing (e.g. *regnande* ‘raining’) (Loman 15–16; Söderbergh 87).

According to Tenev, the nominalising suffixes *-ande/-ende* and *-(n)ing* partly compete and partly show complementary distribution, which is semantically conditioned. However, Tenev concludes that the two suffixes are polysemantic, giving rise to nouns with both process and result meanings (similar to Lundquist, see below).

Swedish nominalisations in *-ande/-ende* and *-(n)ing* have been studied in three different syntactic frameworks by Josefsson, Lundquist, and Thurén, the latter two in combination with present participles. In Josefsson’s (85–97, 116–19) minimalistic account, *-ande/-ende* and *-(n)ing* are Thing morphemes, binding the Event theta-role of their host and turning it into an Event. Argument inheritance is only obligatory when they co-occur with substitute predicates (*av*-dependents and/or genitive *-s*), which carry theta-roles that derive from the verbal stem. In this way, the reading of the derivation is transparent, “i.e. identical to that of the corresponding verb” (116). When substitute predicates are lacking, so too is the link to a transparent reading, and the derivation is open to semantic drift. The two suffixes come with different Aktionsart specifications. For *-ande/-ende*, the event is specified for [ $\pm$ Force] [ $\pm$ Telic], excluding stative predicates. For *-(n)ing*, the event is specified for [+Force] +[Telic], thus bounded (Josefsson).

Following the DM framework, Thurén suggests that the present participle is verbal but that there are also true adjectives in *-ande/-ende*. Hence, “the *-ande/-ende* morpheme corresponds to different abstract morphemes: [+PROPERTY] or [+IMP]” (Thurén 175). In Thurén’s theory, nominalisations and participles in *-ande/-ende* share both the same root (unspecified for lexical category) and the imperfective aspect (the suffix is not nominalising but aspectual).

According to Lundquist’s framework, which blends DM and generativist ideas, nominalisations in *-ande/-ende* and *-(n)ing* are syntactically derived from verbs and give rise to different readings (as nouns or as adjectives, the participial use). Lundquist admits there is a problem with a theory that posits categoryless roots (as DM does), since the fact that both suffixes only attach to roots that surface as verbs must then be explained as a coincidence. Hence, Lundquist claims that *-ande/-ende* is, in fact, *-nde*, attaching to the infinitival (ending in *-a*).<sup>9</sup> His claim would then explain why *-nde* contains more verbal structure than *-(n)ing*, which attaches to the verbal root (*-nde* is thus sensitive to grammatical functions, e.g. subject, object, and *-(n)ing* to semantic roles, e.g. resultee, undergoer). Lundquist concludes that

<sup>9</sup> “The *-e* showing up with the verbs lacking the infinitival *-a* is epenthetic” (Lundquist 67).

*-(n)ing* and *-nde* are semantically extremely light (often with similar, sometimes identical semantics, thus reminding us of Lieber's affixal polysemy), and receive their structure from the verb they attach to. Lundquist (237) rejects the claim that they would be associated with a binding frame (Josefsson) or aspectual value (Thurén).<sup>10</sup>

Our main argument against these syntactic accounts, apart from their apparent disparate explanations, is the plausibility of putting such a load on to the suffixes rather than allowing the root/stem to carry more lexical content (semantic, morphological, syntactic). Considering the iconic parameter (e.g. Dressler), stems would plausibly be more meaningful than empty forms.

#### 2.4 SWEDISH ANCS WITHIN A LEXEME-BASED APPROACH

Gaeta ("Lexeme Formation", "How Lexical is Morphology?") advocates for a lexicalist theory, where morphology plays an important role in lexeme-formation, especially due to its power to build new lexemes. By drawing on Aronoff (*Morphology*), Gaeta ("Lexeme Formation") distinguishes two types of lexicons: Lex(icon)<sub>1</sub>, being a list of entrenched expressions and basic irregularities in the Bloomfieldian sense, and Lex(icon)<sub>2</sub>, being the set of potential lexemes that could be produced by abstract, regular morphological patterns (e.g. °*stealer*, mostly blocked by *thief*, see also ex. (8)). Gaeta ("Lexeme Formation", "How Lexical is Morphology?") builds his theory around the ideas of Corbin ("Hypothèses", "Locutions"), according to which morphology is responsible for the formation of those lexemes that cannot be generated by syntax (i.e. most word-formation patterns, which do not obey syntactic rules), and that morphology is the module most prone to produce lexical units, although all outputs are not necessarily lexicalised (e.g. spontaneous coinages).<sup>11</sup> A lexeme is defined as "a (potential or actual) member of a major lexical category, having both form and meaning but being neither, and existing outside of any particular context" (Aronoff, *Morphology* 11).

<sup>10</sup> More precisely, Lundquist (108–9) objects to Thurén's idea that *-nde* encodes the imperfective aspect, since perfective and stative readings also occur (note also that Swedish lacks overt aspect morphology). In this way, he also refutes Josefsson's theory of *-ande/-ende* nominals, which prohibits stative verbs.

<sup>11</sup> Gaeta posits the "M-principle: Lexeme-formation operates at the level of X<sup>0</sup> and cannot be arguably reduced to syntax" ("Lexeme Formation" 126), which comes with three corollaries, namely, that the sequence cannot be generated by syntax, and/or that its phonology and/or morphology differ from those of a syntactic unit. Gaeta's theory includes two additional principles: the Lexicality of the Input Principle, stating that "Lexeme formation is based on both Lex<sub>1</sub>- and Lex<sub>2</sub>-lexemes" ("Lexeme Formation" 134), and the Filter-Principle, namely that "The Lex<sub>2</sub>-patterns filter out the Lex<sub>1</sub>- or Lex<sub>2</sub>-inputs possibly adapting them, i.e. improving their similarity, to extant patterns" ("Lexeme Formation" 135).



Morphology and syntax rely on different but interacting organisational properties. Gaeta's approach emphasises the role of morphology in giving rise to Lex<sub>2</sub>-lexemes. The rule-list fallacy is avoided, in so far as different types of more or less abstract constructions (words, compounds, derivations, idioms, syntactic constructions, abstract schemas, etc., cf. Goldberg) emerge from Lex<sub>1</sub> and represent the interface between syntactic and morphological formation rules, with the latter building the Lex<sub>2</sub>, fed by units from Lex<sub>1</sub> (Gaeta, "How Lexical is Morphology?").

Following Gaeta ("Lexeme Formation", "How Lexical is Morphology?"), the present study considers deverbal nouns to be morphological constructs. Affixes contrast with lexemes by realising a semantic function that depends on the construction in which they appear (affixes are not stored and lack independent meaning) (e.g. Booij). Consequently, the lexical category and the semantics of the output, the (polysemous) event interpretation, derive from the construction as a whole, not from the affix. The lexeme-based approach implies that the verbal lexemes in these patterns come with a syntactic specification of a list of arguments (NP0/Arg1, (NP1/Arg2), (NP2/Arg3)), as well as a semantic specification of event structure (v'(e, x, (y), (P'(z)))) (see e.g. Fradin). This assumption actually parallels Meinschaefer's (405) remark that deverbal nouns, at least complex event nouns, inherit both the event structure and argument structure of the verbal base. In compounding ANCs, the incorporated noun corresponds to Arg2 or Modifier (Arg3 or adjuncts in syntax) (cf. Rosenberg 2010 on agentive nominal compounds).

Regarding the competition between different suffixes that cover similar semantics, Lieber (2015:16) mentions two cases of form-meaning mismatch: either several meanings pair to one affix or multiple affixes cover the same semantic space—both cases apply to *-ande/-ende* and *-(n)ing*, which both cover several meanings while occupying the same semantic space, in our view.<sup>12</sup> Aronoff ("Morphology" 14–15) claims that blocking results from competition, with blocking defined as "the nonoccurrence of one form due to the simple existence of another" (Aronoff, *Word Formation* 43). However, Aronoff ("Competition", "Competitors") also points out that it can take some time before the competition between two forms for the same semantic niche is resolved, just as in evolutionary biology—nevertheless, differentiation will come at some point.

Aronoff ("Competitors") remarks that many derivational suffixes change the lexical category of their base but come with little specific semantic contribution. As the main purpose of lexical formations is to name a concept, their meaning tends to lie outside of grammar and is open to change. Thus, the semantics of derivation is

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<sup>12</sup> Note that the present study has no intention of dealing with the semantic differences contributed by the two suffixes.

clearly different from that of inflection, which maps onto pre-determined morpho-syntactic meanings (Aronoff “Competitors”).

### 3. DATA AND SOME METHODOLOGICAL CONCERNS

This study is based on data from the corpus sv-COVID-19 (available at [spraakbanken.gu.se](http://spraakbanken.gu.se)), containing texts on the pandemic from Swedish sites comprising 3.33 million tokens from January 2020 to the beginning of January 2021 (the corpus is continuously being expanded).<sup>13</sup> The motivation for using this particular corpus was because of its up-to-date content, including new expressions that have entered the language during the pandemic. Productive nominalisation patterns, as well as emerging ones, can thus be assumed to occur and be measurable to some extent.

The following queries were used to search for attestations of ANCs in the corpus, either phrasal or compounding, and containing either *-ande/-ende* or *-(n)ing* (the endings within parentheses are definite and plural inflections, included in the searches):

Phrasal: **V-*ande*(-t/-n(-a))/-*ende*(-t/-n(-a)) + av + X V-(n)*ing*(-en/-ar(-na)) + av + X**

Compounding: **X-V-*ande*(-t/-n(-a))/-*ende*(-t/-n(-a)) X-V-(n)*ing*(-en/-ar(-na))**

In order to yield a manageable amount of data, a preselection of nouns (the Xs) to be used in the queries was found necessary. Hence, X corresponds to 15 different nouns (listed in Table 1 below, e.g. *virus*, *corona*, *test*), selected on an *ad hoc* basis but with expected relevance for the pandemic situation. By preselecting specific nouns, the intention was then also to be able to compare the distribution of different ANC types (phrasal vs. compounding, suffixation on *-ande/-ende* vs. *-(n)ing*).

<sup>13</sup> Because of licensing and privacy restrictions, the corpus cannot be downloaded and renders sentences in a randomised order. Variant spellings or word forms are normalised according to their lemma or dictionary form (e.g. ‘Covid-19’, ‘COVID-19’, ‘Covid19’, ‘Covid’, ‘2019-nCoV’, ‘cv19’, etc. are reduced to ‘covid-19’). The frequencies of words are given as absolute frequency values (e.g. 4,500 occurrences for ‘coronavirus’) (for more details, see <https://spraakbanken.gu.se/blogg/index.php/2021/01/13/a-swedish-covid-19-sv-covid-19-corpus-and-its-exploration-smorgasbord>).

## 4. THE ANCS IN THE SWEDISH DATA

This section presents the analysis of the attested ANCs in the data and addresses each of the two research questions in a straightforward manner, before turning to the issue of competition between the different ANC types and suffixes.

4.1 COMPOUNDING AND PHRASAL ANCS WITH *-ANDE* OR *-(N)ING*

With respect to the first research question on the extent to which the suffixes *-ande*<sup>14</sup> and *-(n)ing* occur in compounding versus phrasal ANCs, table 1 shows the type and token frequency for each ANC type containing the 15 preselected nouns in the corpus data. For seven of the nouns, all four combinations of ANC types are possible, and all nouns but one occur in at least two combinations. In our view, this finding indicates that there is some degree of competition in Swedish between the ANC types and suffixes, rather than there being a complementary distribution (cf. Aronoff, “Competitors”).

	<i>-ande</i>		<i>-(n)ing</i>	
	Compounding ANC	Phrasal ANC	Compounding ANC	Phrasal ANC
<i>corona</i> 'Corona'	<i>corona + V-ande</i>	<i>V-ande av corona</i>	<i>corona + V-(n)ing</i>	<i>V-(n)ing av corona</i>
type/token	5/7	–	33/110	7/16
<i>coronavirus</i> 'Corona virus'	<i>coronavirus + V-ande</i>	<i>V-ande av coronavirus</i>	<i>coronavirus + V-(n)ing</i>	<i>V-(n)ing av coronavirus</i>
type/token	–	–	3/6	6/13
<i>covid(-19)</i> 'COVID (19)'	<i>covid(-19) + V-ande</i>	<i>V-ande av covid(-19)</i>	<i>covid(-19) + V-(n)ing</i>	<i>V-(n)ing av covid(-19)</i>
type/token	1/7	2/3	16/74	25/364
<i>virus</i> 'virus'	<i>virus + V-ande</i>	<i>V-ande av virus</i>	<i>virus + V-(n)ing</i>	<i>V-(n)ing av virus</i>
type/token	5/18	4/4	20/75	9/16
<i>smitta</i> 'infection/ disease'	<i>smitt + V-ande</i>	<i>V-ande av smitta</i>	<i>smitt + V-(n)ing</i>	<i>V-(n)ing av smitta</i>

<sup>14</sup> For reasons of simplicity, *-ande* is given as the notation for the *-andel/-ende* alternation throughout this section.

type/token	5/27	3/3	12/2091 <sup>15</sup>	6/16
<i>antikroppar</i> 'antibody'	<i>antikropp</i> + V- <i>ande</i>	V- <i>ande av</i> <i>antikroppar</i>	<i>antikropp</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>antikroppar</i>
type/token	1/3	3/4	12/82	10/23
<i>vaccin</i> 'vaccine'	<i>vaccin</i> + V- <i>ande</i>	V- <i>ande av</i> <i>vaccin</i>	<i>vaccin</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>vaccin</i>
type/token	5/15	4/19	34/172	17/44
<i>infektion</i> 'infection'	<i>infektion</i> + V- <i>ande</i>	V- <i>ande av</i> <i>infektion</i>	<i>infektion</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>infektion</i>
type/token	2/5	–	5/48	5/14
<i>munskydd</i> 'mask'	<i>munskydd</i> + V- <i>ande</i>	V- <i>ande av</i> <i>munskydd</i>	<i>munskydd</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>munskydd</i>
type/token	–	2/22	3/6	5/50
<i>mask</i> 'mask'	<i>mask</i> + V- <i>ande</i>	V- <i>ande av</i> <i>mask</i>	<i>mask</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>mask</i>
type/token	–	3/3	4/4	5/9
<i>lukt</i> 'smell'	<i>lukt</i> + V- <i>ande</i>	V- <i>ande av</i> <i>lukt</i>	<i>lukt</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>lukt</i>
type/token	–	–	4/14	2/2
<i>smak</i> 'taste'	<i>smak</i> + V- <i>ande</i>	V- <i>ande av</i> <i>smak</i>	<i>smak</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>smak</i>
type/token	–	–	5/10	–
<i>kris</i> 'crisis'	<i>kris</i> + V- <i>ande</i>	V- <i>ande av</i> <i>kris</i>	<i>kris</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>kris</i>
type/token	1/3	2/3	8/50	1/18
<i>risk</i> 'risk'	<i>risk</i> + V- <i>ande</i>	V- <i>ande av</i> <i>risk</i>	<i>risk</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>risk</i>
type/token	2/2	1/1	8/95	5/8
<i>sym(p)tom</i> 'symptom'	<i>sym(p)tom</i> + V- <i>ande</i>	V- <i>ande av</i> <i>sym(p)tom</i>	<i>sym(p)tom</i> + V-( <i>n</i> ) <i>ing</i>	V-( <i>n</i> ) <i>ing av</i> <i>sym(p)tom</i>
type/token	–	–	6/10	1/2
<b>n (type/token)</b>	<b>27 (87)</b>	<b>24 (62)</b>	<b>173 (2847)</b>	<b>104 (595)</b>
<b>n total (type/token)</b>	<b>328 (3591)</b>			

Table 1. Type/token frequency per preselected noun and ANC type with *-ande* or *-(n)ing* in the data

<sup>15</sup> The high number is due to 1,738 occurrences of *smittspridning* 'infection-spreading' and 321 occurrences of *smittspårning* 'infection-tracing'.

Table 2 summarises the data, showing that both suffixes occur in both compounding and phrasal types. Compounding types are more frequent than phrasal ones for both suffixes, which reflects the preference for compounding as a word-formation device in Swedish, as Koptjevskaja-Tamm also remarks. Moreover, ANCs with *-(n)ing* are much more frequent than those with *-ande* (84% vs. 16%), whether compounding or phrasal, thus confirming what Loman found in his data from the 1950s, where *-(n)ing* was five to ten times more frequent than *-ande*. In other words, compounding ANCs with *-(n)ing* could be claimed to be the preferred ANC option in Swedish. However, nothing prevents the possibility that some cases of complementary distribution between ANCs with *-ande* and ANCs with *-(n)ing* exist, given that entrenched deverbal nouns with one suffix can block variants with the other, and/or that semantic differences may intervene (cf. section 2.3).

	<i>-ande</i>		<i>-(n)ing</i>	
	Compounding	Phrasal	Compounding	Phrasal
<i>n</i> (type)	27 (8%)	24 (7%)	173 (53%)	104 (32%)
<i>n</i> (type)	51 (16%)		277 (84%)	
<b><i>n</i> total (type)</b>	<b>328</b>			

Table 2. Compounding and phrasal ANCs with *-ande* and *-(n)ing* in the data (type)

#### 4.2 ARGUMENTS EXPRESSED IN COMPOUNDING AND PHRASAL ANCS WITH *-ANDE* OR *-(N)ING*

For the second research question, concerning the realisation of arguments in compounding and phrasal ANCs, the data are restricted to those that occur once (hapaxes), hence 173 ANCs. This decision was based on a time-saving constraint, given that each single occurrence had to be looked up in context.

If we start with the compounding ANCs, table 3 shows that this type, either with *-ande* or *-(n)ing*, incorporates Arg2 or a modifier element, and that Arg1 is sometimes expressed outside of the ANC (one incorporated Arg1 is attested, see (16)).

Compounding ANCs				
Arg1	X=Arg2	X=modifier/other	X=Arg1	<i>n</i>
<i>X-V-ande</i>				
1	3	5		8
<i>X-V-(n)ing</i>				
10	47	46	1	94

Table 3. Compounding ANCs with *-ande* and *-(n)ing* (hapaxe types) and the expression of arguments (X=incorporated element)

Below, there follow some examples from the data with the incorporated item classified either as Modifier or Arg2, with *-ande* (8–9) (in (8) Arg1 is expressed as a possessive pronoun) and *-(n)ing* (10–11):

(8) *vårt coronakarantänande*<sup>16</sup> ‘our Corona-quarantining’ (corona = Modifier, our = Arg1)

(9) *en balans i risktagande* ‘a balance in risk-taking’ (risk = Arg2)

(10) *samma antikroppsbehandling som president Trump fick* ‘the same antibody-treatment that President Trump got’ (antibody = Modifier)

(11) *personer med positiv virusodling* ‘persons with positive virus-cultivation’ (virus = Arg2)

In Table 4, we see the possible expression of arguments for the phrasal ANCs in the data.

Phrasal ANCs				
Arg1	X=Arg2	X=modifier/other	X=Arg1	n
V- <i>ande</i> av X				
1	13	1		14
V- <i>(n)ing</i> av X				
7	44	12	1	57

Table 4. Phrasal ANCs with *-ande* and *-(n)ing* (hapaxe types) and the expression of arguments (X = *av*-dependent)

Compared to the more frequent compounding ANC type, the Arg2 is expressed more often in the phrasal ANC type, in particular for the phrasal ANC types with *-ande* (see (12)), compared to the phrasal ANC types with *-(n)ing* (see (13)):

(12) *stävjandet av virus* ‘the suppressing of virus’ (virus = Arg2)

(13) *massvaccinering av covid-19* ‘mass-vaccination of COVID-19’  
(COVID-19 = Modifier, and also with the incorporated mass = Modifier)

<sup>16</sup> This is actually one of the rare attestations in the data of a noun—*karantän* ‘quarantine’—turned into an eventive verb lexeme, specified for one argument—*karantäna* ‘(to) quarantine’. The verb is thus an example of output from Gaeta’s (“Lexeme Formation”) Lex<sub>2</sub>, which contains potential lexemes, built by regular morphological patterns (conversion of this type is common in Swedish, cf. Teleman et al. 36–37, 521).

If we now look at the realisation of Arg1, Tables 3 and 4 reveal that phrasal and compounding ANC's with *-ande* or *-(n)ing* occur with the Arg1, as a preposed genitive, at a similar rate, that is, approximately one out of ten cases. Two examples from the data are given in (14–15):

(14) *EU:s virushantering* 'EU's virus-handling' (EU=Arg1, virus=Arg2)

(15) (*China*<sub>1</sub>...) *sitt*<sub>1</sub> *ansvarslösa spridande av virus* 'their irresponsible spreading of virus' (their=Arg1, virus=Arg2).

Although the data are limited, they suggest that Swedish might be more prone to express Arg1 along with ANC's, compared to English, at least (cf. Hopper and Thompson's claim that "nominalizations are extremely low in Transitivity" 285).

There are also two cases in the data where we could consider Arg1 to be either incorporated (16) or else occurring in the *av*-dependent (17). However, both these examples include non-agentive verbs (semantically, the Arg1 is not an Actor but rather an Undergoer):

(16) *minska virusbelastningen* 'decrease the virus-load' (i.e. the virus is burdening something, applicative V)

(17) *vi har inte sett den muteringen av virus* 'we have not seen that mutation of the virus' (i.e. the virus is mutating, intransitive/unaccusative V)

To sum up so far, the rather significant presence of incorporated modifiers in the compounding ANC's marks their similarity to primary compounds, whereas the phrasal ANC's show a preference for combining with Arg2. For Swedish ANC's, we might therefore assume a continuum from compounding ANC's, being morphological constructs, to phrasal ANC's, being syntactic formations. This view would be in line with ten Hacken, who suggests a gradual transition between primary compounds (e.g. *car thief*) and deverbal compounds (e.g. *taxi driver*), since primary compounds can also involve an implicit predicate (cf. Jackendoff; Štekauer). The view also aligns with Grimshaw's ("Deverbal Nominalizations") observation that deverbal nominals can be seen as a continuum between noun-like ones and verb-like ones.

## 4.3 POTENTIAL COMPETITION AND COMPLEMENTARY DISTRIBUTION

Finally, we enter a little more deeply into the idea that those forms that compete for the same semantic niche may take on different distributional patterns and functions (Lieber; Aronoff, “Competitors”) in relation to the Swedish ANCs in the data.

Firstly, regarding the possible competition between the phrasal and compounding ANC types, the compounding type predominates in the data. There are, however, attestations, where the compounding (18) and phrasal (19) types involve the same lexical items and express similar semantics, which suggest that either type is equally acceptable and might just depend on a personal preference for a compound instead of a syntactic phrase. In other words, it is competition, with incorporation in the lead:

(18) *virus + V-(n)ing*: *ökad virusspridning i landet* ‘increased virus-spreading in the country’

(19) *V-(n)ing av virus*: *(ökad) spridning av virus bland personer* ‘(increased) spreading of the virus among people’

In addition, several attestations combine incorporation and *av*-dependents (see also (13)). In (20), the incorporated element is a modifier, and the *av*-dependent corresponds to Arg2. In (21), instead, Arg2 is incorporated and the *av*-dependent acts more as a modifier to Arg2. Furthermore, in (22) a compounding variant of (21) is attested (again compound vs. phrase, but three-part compounds could be considered a less favoured option, as they are not always stylistically elegant):

(20) *coronaanpassning av arbetsplatser* ‘Corona-adaptation of workplaces’

(21) *den ökande smittspridningen av corona* ‘the increasing infection-spreading of the Corona’

(22) *coronasmittspridningen* ‘Corona-infection-spreading’

Secondly, complementary distribution between ANCs with *-ande* and those with *-(n)ing* has been claimed to exist, mainly by blocking or by being semantically conditioned (Loman; Josefsson; Tenev; Lundquist). The chief argument has been that nominalisations with *-ande* often have a value resembling an imperfective aspect, whereas those with *-(n)ing* tend to be more similar to a perfective-like aspect. Although the present study is not concerned with semantic differences contributed by the two suffixes, among the ANCs with *-ande* or



*-(n)ing* that contain similar lexical items the data contain a few examples, such as (23). Here, *-ande* would have been a better option, as (24) shows. Nevertheless, that *-(n)ing* is actually attested might indicate an ongoing competition, semantically conditioned or not, between the two suffixes (although examples such as (23) might also be due to automatic translations from websites in other languages).

(23) *?obligatorisk maskbärning* ‘obligatory mask-bearing’

(24) *samvariationen mellan bärande av munskydd och covid-19*  
‘the covariation between wearing of mouth guard/mask and COVID-19’

As for the methodological consideration that you never get negative evidence from a corpus, we can create phrasal variants of (23–24) with *-(n)ing* and *-ande*, as in (25–26), for which only the compounding variant with *-ande* is fine. Hence, the compounding ANCs sometimes result in synthetic compounds, which could be a partial explanation for why they prevail over phrasal ANCs.

(25) *\*bärning av mask* ‘wearing of mask’

(26) *munskyddsbärande* ‘mouthguard-wearing’

## 5. CONCLUSION

This study can be seen as a first attempt to study Swedish ANCs in use, based on a limited set of corpus data. In the data, ANCs with *-(n)ing* are considerably more frequent than ANCs with *-ande/-ende*, whether compounding or phrasal. Moreover, compounding ANCs are more frequent than phrasal ANCs, whether combined with *-ande/-ende* or *-(n)ing*.

The compounding ANCs are found to contain a modifier or Arg2 to a similar degree, whereas the phrasal ANCs more often contain Arg2. Within a lexeme-based account of word-formation, this finding can be explained by the gradual transition from primary compounds to deverbal compounds and compounding ANCs, which are morphological formations, and then over to phrasal ANCs, which are syntactic formations. Nevertheless, simplex action nominals, whether including *-ande/-ende* or *-(n)ing*, are morphological constructs that contain a verb lexeme, specified for a list of arguments and an event structure. The entire construction will thus be an event noun capable of expressing arguments of the verbal base to a different extent.

As for the potential competition between compounding and phrasal ANC's, the present study suggests that compounding ANC's are in the lead, but whether they will finally rule out the phrasal ones is a question for the future, as well as for the rivalry between morphology and syntax (if there is one). In addition, another open-ended question is whether *-(n)ing* will take precedence over *-ande/-ende* at some point in time; as for now, they are not always mutually replaceable, it seems.

To conclude, further and deeper studies of ANC's are obviously needed to attain a complete theory, but corpus-based studies seem to be a promising way forward, by adding valuable theoretical pieces on how ANC's behave in actual use.

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## ACTION NOMINAL CONSTRUCTIONS AND THEIR USE IN A SWEDISH COVID-19 CORPUS

### Summary

Swedish has two main types of action nominal constructions (ANCs), either compounding or phrasal (incorporating or nominal, in Koptjevskaja-Tamm 1993), which contain deverbal nouns in *-ande* or *-(n)ing*, along with dependent elements. This study investigates Swedish ANCs in use, based on a limited data set from a COVID-19 corpus. It adopts a lexeme-based approach, where deverbal nouns (simplex action nominals), whether including *-ande* or *-(n)ing*, are morphological constructs and contain a verb lexeme, specified for a list of arguments and an event structure. The study focusses on two questions: to what extent do the two suffixes occur in the compounding versus phrasal ANCs, and to what extent and by what means are the arguments of the verbal base expressed in the compounding versus phrasal ANCs. The data of 328 ANCs (type) show that compounding ANCs predominate over phrasal ANCs, whether combined with *-ande* or *-(n)ing*, and that *-(n)ing* is much more frequent than *-ande*. As for the expression of arguments, the compounding ANCs contain equally often a modifier (similar to NN-compounding) or an Arg2/internal argument, whereas the phrasal ANCs more often express the Arg2. The Arg1/external argument tends to be expressed as a preposed genitive in one out of ten cases in both compounding and phrasal ANCs. Within a lexeme-based account, we can speak of a gradual transition from morphological constructions, more typically primary compounds (noun-noun) and less typically deverbal compounds (such as compounding ANCs), over to syntactic constructions (such as phrasal ANCs). In conclusion, the study suggests that compounding ANCs are the preferred option in contemporary Swedish for both suffixes, with compounding ANCs, in particular those with *-(n)ing*, bordering on NN-compounding. Given that both phrasal and compounding ANCs with *-ande* or *-(n)ing* occur, albeit to different extents, competition between the morphological and syntactic patterns remains unresolved.

**Keywords:** deverbal nominalisations; word-formation; morphological constructions; compounding; lexeme-based approach.

## KONSTRUKCJE Z NOMINALIZACJAMI AKCJI I ICH WYSTĄPIENIA W SZWEDZKIM KORPUSIE COVID-19

### Streszczenie

W szwedzkim występują dwa typy konstrukcji z nominalizacjami akcji (ANC), to jest złożenia i konstrukcje frazowe (inkorporujące i nominalne u Koptjevskiej-Tamm 1993). Konstrukcje te zawierają, obok innych zależnych elementów, rzeczowniki dewerbalne z *-ande* i *-(n)ing*. Nasza analiza dotyczy użycia szwedzkich konstrukcji ANC, w oparciu o konkretny korpus danych z korpusu COVID-19. Analiza adoptuje podejście oparte na leksemie (lexeme-based), w którym rzeczowniki dewerbalne (proste rzeczowniki akcji), czy to zawierające *-ande*, czy *-(n)ing*, są konstrukcjami morfologicznymi i zawierają leksem werbalny, ze specyfikacją listy argumentów i struktury wydarzenia. Studium koncentruje się na dwu pytaniach: w jakim stopniu oba sufiksy są obecne zarówno w złożeniach, jak i w konstrukcjach frazowych ANC, a także w jakim stopniu, i w jaki sposób, argumenty bazy werbalnej są wyrażone w złożeniach, w porównaniu z frazowymi konstrukcjami ANC. Dane zebrane na podstawie 328 konstrukcji typu ANC wskazują na to, że konstrukcje ANC tworzące złożenia są bardziej liczne niż konstrukcje frazowe, niezależnie od obecności *-ande* czy *-(n)ing*, a także, że *-(n)ing* jest o wiele częściej używane niż *-ande*. Co do problemu ekspresji argumentów, złożenia ANC zawierają element modyfikujący (tak, jak w przypadku złożzeń typu NN) tak często jak Arg1/argument wewnętrzny, podczas gdy frazom ANC Arg2 towarzyszy znacznie częściej. Arg1/argument zewnętrzny zwykle wyrażany jest dopełniaczem w prepozycji dla złożzeń i fraz ANC. Dzieje się tak w przypadku jednym na dziesięć. W podejściu opartym na leksemie można mówić o stopniowym przejściu od konstrukcji morfologicznych, reprezentujących bardziej typowo złożenia prymarne (rzeczownikowo-rzeczownikowe), a mniej typowo złożenia odczasownikowe (takie jak złożenia ANC), aż do struktur syntaktycznych (takich, jak frazy ANC). Analizę kończy stwierdzenie, że złożenia typu ANC są chętniej wybieraną opcją we współczesnym szwedzkim w przypadku obu sufiksów, a szczególnie chętnie — te z formantem *-(n)ing*, przypominające złożenia NN. Ponieważ zarówno frazy, jak i złożenia ANC z elementami *-ande* i *-(n)ing* występują w szwedzkim, chociaż w różnym stopniu, należy stwierdzić, że konkurencja pomiędzy morfologicznymi i syntaktycznymi wzorami użycia pozostaje żywa w tym języku.

*Przekład angielskiego streszczenia  
Anna Malicka-Kleparska*

**Słowa kluczowe:** nominalizacje dewerbalne; słowotwórstwo; konstrukcje morfologiczne; złożenia; podejście oparte na leksemie.