

Grammaticalization of *verdienen* into an auxiliary marker of deontic modality

An item-driven usage-based approach

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This paper investigates synchronic variation in the lexical and grammatical environments of the German lexical verb *verdienen* ‘earn’, ‘deserve’. In its lexical uses, *verdienen* co-occurs with an object noun phrase whose head is either concrete (e.g. *Geld* ‘money’) or, more commonly, abstract (e.g. *Beachtung* ‘attention’). When it is used more grammatically with deontic modal meaning, *verdienen* is followed by a passive or active infinitive. This paper uses collostructional analyses to contrast lexical and grammatical uses in terms of the most strongly attracted lexical items, which are grouped into semantic classes. The results reflect different degrees of host-class expansion (cf. Himmelmann 2004), whereby the collexemes of *verdienen* expand from concrete to abstract and their morpho-syntactic contexts from nominal to infinitival complement and subsequently from passive to active. Synchronic distribution can thus serve as a window on diachronic development (Kuteva 2001), in this case the rise of a deontic modality marker.

1. Introduction

The emergence of modal constructions has been a major topic (not only) in grammaticalization studies during several decades now, whereby the focus of attention has been on three areas. To begin with, most research has concentrated on the rise of epistemic meanings from constructions with modal verbs and infinitive verbal lexemes denoting non-epistemic (i.e. deontic, volitional, dispositional) modal meanings. Second, many surveys have focused on constructions with semi-modal verbs and infinitive verbal complements (e.g. Krug, 2000; Narrog, 2012; Traugott, 1989; Dekalo, 2019), and thirdly, there exists a number of studies on the rise of evidential constructions, particularly focusing on partially grammaticalized constructions with verbs meaning ‘threaten’, ‘promise’, ‘seem’, etc. (Diewald & Smirnova,

2010; Cornillie, 2004; Heine & Miyashita, 2008; Diewald & Stathi, 2019). The rise of non-epistemic modal functions, e.g. deontic or volitional modality, from more lexical items and constructions with more concrete meaning, like regular main verbs with their complementation patterns, has attracted much less attention.

Thus, in German, the verb *verdienen* ('deserve', 'earn') has not been regarded, let alone investigated as a modality marker so far. In the present study, we claim that *verdienen* is on the rise as an auxiliary verb of deontic modality. In order to demonstrate this, we focus on the present day usage of the verb *verdienen*. According to the assumption in grammaticalization research that synchronic variation is a window for diachronic development (cf. Kuteva, 2001, p. 9; see also Bybee, Perkins & Pagliuca, 1994, p. 18), we aim to reconstruct the diachronic development, i.e. the grammaticalization path, of the verb *verdienen* utilizing data of modern German. This well established method of deriving assumptions on diachronic processes by looking at synchronic data rests on some basic tenets of grammaticalization theory, namely that (i) the process of grammaticalization is in principle unidirectional, which means that (ii) it leads from less grammatical to more grammatical functions in a particular item or construction; (iii) it is possible to identify different degrees or stages of grammaticalization in morpho-syntactic, semantic and functional terms (e.g. via testing instruments like the grammaticalization parameters introduced by Lehmann 2015 [1982]); (iv) in the synchronic layer of a language containing several constructions of an item of different "ages", the more grammaticalized ones – with very high probability – will be the diachronically younger ones, and the degrees of grammaticalization of co-existing constructions can be assumed to reflect the relative chronology of their diachronic development.

This synchronic reconstruction method is not only indispensable for research into languages with no diachronic evidence, but it is useful for languages with a long history of documentation like German as well, because for the modern stage of the language there are more data with much better accessibility than is the case for centuries past. Therefore, the synchronic investigation of rich data (of the 20th century) concerning a particular item (here *verdienen*), selected and organized along the relevant features and parameters that are the results of many in-depth studies on the grammaticalization history of the category in question (here modality in verbal periphrasis, i.e. auxiliarization of modal verbs in German), is able to provide a solidly informed reconstruction (or hypothesis) of the grammaticalization path of that particular item (cf. Sections 2 and 3 for details). This is what the present study aims at.

The following examples illustrate the four constructions of *verdienen* in German, which we are most interested in as they represent important grammaticalization stages of the verb *verdienen*.

- (1) *Er* *verdiente* *Geld* *durch* *Unterricht* [...].
 He-NOM earn-PRET.3SG money-N.ACC through lessons-ADV.INST
 ‘He earned money through giving lessons.’ (DWDS CC20)¹
- (2) *Aber* *ihr* *mögt* *darüber* *sagen*, *was* *ihr*
 But you-NOM may-AUX.MOD about it say-INF whatever you-NOM
wollt, *er* *verdient* *doch* *Respekt*.
 want-PRS.2PL he-NOM deserve-PRS.3SG still respect-M.ACC
 ‘You may say whatever you want, he still deserves respect.’ (DWDS CC20)²
- (3) *Gerade* *dieses* *Detail*, *bedenkt* *Arlecq* *schreibend*,
 Especially this detail-N.NOM consider-PRS.3SG Arlecq-M.NOM write-PROG
verdiente *hervorgehoben* *zu* *werden*, [...]. (DWDS CC20)³
 deserve-PRET.3SG emphasize-PST.PTCP to be-INE.AUX.PASS
 ‘This very detail, Arlecq considers while writing, should be emphasized/
 deserves to be emphasized.’
- (4) *Ein* *so* *Elender* *verdienne* *nicht* *zu* *leben*.
 One such miserable-M.NOM derserve-PRS.SUBJ.3SG not to live-INF
 ‘Such a miserable one should not live.’ (DWDS CC20)⁴

As the examples show, the constructions express different lexical and grammatical meanings, which are ordered here in their assumed increase in degrees of grammaticalization (for their constructional format see Section 3.1). In (1) and (2), the verb *verdienen* functions as a lexical verb expressing the meaning ‘to earn’ and ‘to deserve’ respectively. In (3) and (4), *verdienen* appears in combination with infinitive verbal complements, always with the infinitive particle *zu*. Accordingly, (3) represents the construction with an infinitive passive (past participle of main verb with *zu* & *werden*), which is associated with the meaning ‘should be V-ed’. (4) exemplifies the construction with an active infinitive which expresses the meaning ‘should V’. The verb *verdienen* is regarded here as more grammaticalized and as denoting obligation. This is why the target domain of this grammaticalization process is deontic modality.

In order to reconstruct the grammaticalization path of the verb *verdienen* towards a deontic modal, we conducted an in-depth item-driven synchronic analysis

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1. Lebert, Schaeffer, Albrecht: *Helianth II*, Bonn: Weidle, 1995 [1920], p. 454
 2. Enzensberger, Hans Magnus: *Der kurze Sommer der Anarchie*, Frankfurt a. M.: Suhrkamp, 1972, p. 61
 3. Fries, Fritz Rudolf: *Der Weg nach Oobliadooh*, Frankfurt a. M.: Suhrkamp, 1966, p. 77
 4. Klepper, Jochen: *Der Vater*, Gütersloh: Bertelsmann, 1962 [1937], p. 522

of its four constructions using the data from the DWDS Core Corpus (*DWDS-Kernkorpus*; Geyken, 2007).⁵ This means that the present study focuses on the identification of typical lexical items, i.e. collexemes, which occur in the corresponding schematic complement slots of the four constructions with the verb *verdienen*, applying a *simple collexeme analysis* (Stefanowitsch & Gries, 2003). As a further step, we sort the most attracted lexemes into semantic groups using classifications of GermaNet (Hamp & Feldweg, 1997) in order to suggest some generalizations concerning the individual steps in the semantic change of *verdienen*.

The structure of the paper is as follows. Section 2 outlines the theoretical and empirical background of this study, and provides a sketch of deontic modality as the notion is used here. The methods driving the empirical part of our study are described in Section 3. The presentation of the results and their discussion are found in Sections 4 and 5 respectively.

5. Based on information provided by the online Grimm dictionary (Grimm & Grimm, 1854, see the entry *verdienen*, paragraph 3a and 3b), we may assume that the constructions containing an accusative complement as represented in (1) and (2) are the oldest ones. Exploratory random checks on data taken from the German DTA corpus (Deutsches Textarchiv, ‘German text archive’) showing occurrences from Early New High German and New High German as well as further examples representing Middle High German, available through the open platform ANNIS, also substantiate this assumption.

We would like to thank one of the reviewers for pointing out that in Dutch ‘verdienen’ constructions are attested with finite subordinate clause with the subjunction ‘that’ since the 12th century, and with non-finite complements with stative verbs and passive since the late 16th century (e.g. *Hy heeft wel verdient gestraft te werden* ‘he has definitely deserved to be punished’ (1573). In short, Dutch shows stages comparable in degrees of grammaticalization to the German constructions exemplified in (3) and (4) earlier than German (at the present state of research). This observation confirms the findings of Lamiroy & De Mulder (2011, p. 302) that “several grammaticalization processes may be more advanced in one language than in the other languages of the same family”. For the Germanic languages, they claim that English is further advanced in grammaticalization processes than German, while Dutch occupies an intermediate position with Icelandic being more conservative than German. This is illustrated in the following cline by Lamiroy (2011, p. 167): English > Scandinavian (Continental) > Dutch > German > Icelandic. For empirical evidence showing that English has already completed changes that are still ongoing in German see Lamiroy (2011, pp. 175–176, 185–188); cf. also Diewald & Stathi (2019, p. 180) for additional data and references. In short, even in closely related languages, the absolute chronology of attestation of a specific construction in one language cannot be used as evidence for the progress of a grammaticalization of the analogous construction in the other language. Degrees of grammaticalization for a particular item and its constructions have to be measured within the language in question, and they can be measured independently of diachronic data.

2. Theoretical background

Our theoretical approach is based on the following three components: grammaticalization theory, typological findings and usage-based construction grammar. The last years have seen an upsurge of discussions concerning the connections as well as the dissociations of grammaticalization theory on the one hand and construction grammar on the other (e.g. Coussé, Andersson & Olofsson, 2018; Diewald, 2006; Diewald, 2020; Hilpert, 2018; Noel, 2007). Though this study is not the place to enter deeply into these questions (for a discussion of convergence as well as the incompatibilities of grammaticalization theory and construction grammar see Diewald, 2020), it is necessary to sketch some lines of thought and some theoretical foundations that guide this work. This is done in Section 2.1, while Section 2.2 offers an introduction to the conception of modality, in particular deontic modality, that is the foundation of this study.

2.1 Grammaticalization and constructional concepts

Though grammaticalization is predominantly investigated in terms of diachronic lines of development, it is relevant in the investigation of synchronic variation as well. In this study, we claim that *verdienen* is on the rise as an auxiliary verb of deontic modality. Contending that synchronic distribution is a window for diachronic development (cf. Kuteva, 2001, p. 9), the empirical focus of this study is on the synchronic variation of the verb *verdienen* in modern German in terms of degrees of grammaticalization and on an attempt at deriving possible diachronic paths of development from this synchronic analysis. In the following, some further considerations supporting the basic assumptions described in the introduction (unidirectionality, grammaticalization paths and testing the degrees of grammaticalization) are mentioned in necessary brevity.

First, there are phenomena indicating that observations made with regard to synchronic variation based on contemporary data can be treated as evidence or at least as reasonable assumptions for how diachronic development takes place. Old forms and/or meanings in a broad functional domain (as, for instance, in modality) can persist for a long period of time side by side with new forms and/or meanings, i.e. the rise of new forms and/or meanings does not necessarily lead to the loss of older ones. This kind of synchronic diversity, called *layering* (Hopper, 1991, p. 22), shows how older grammatical techniques remain available, possibly interacting with newer ones. Hopper (ibid.) considers further principles like *divergence*, i.e. the viability of autonomous lexical items after parallel grammaticalization of particular constructions with that item, or *persistence*, i.e. the reflection of lexical history of

an (originally lexical) item within its (newer) grammatical behaviour,⁶ all of which draw attention to synchronic observations reflecting diachronic development.

Second, this methodology also rests on some important insights in auxiliation from a cross-linguistic perspective showing that “patterns of multiple uses in effect constitute fossil evidence and can thus serve as a diagnostic of earlier history.” (Bybee, Perkins & Pagliuca, 1994, p. 18). By looking into synchronic variation in order to reconstruct diachronic development, more precisely, possible grammaticalization paths, “the fact that grammatical forms do not exist in a functional vacuum, but reflect general strategies by the speakers of languages for putting together discourses”, is also taken into account (Hopper & Traugott, 2003, p. 168). Hopper & Traugott (2003, p. 168–170) give examples of ergative case marking, Kuteva (2001, pp. 6–10) provides a detailed overview about theoretical and methodological issues followed by the discussion of cases of contemporary Ewe progressive structures showing locative morphology as a result of spatial constructions (*ibid.*, p. 8–9) and English progressive forms showing overlaps in grammaticalization chains (*ibid.*, p. 10–11).

Beyond these considerations concerning the validity of synchronic data for assumptions about diachronic development in grammaticalization, there are some more general issues that have to be addressed in the following.

It is one of the basic tenets of grammaticalization theory as well as of typological approaches that there exists an essential functional distinction between lexical items/constructions on the one hand, and grammatical items/constructions on the other hand. This difference can be measured by contrasting individual (types of) constructions with the help of analytic procedures such as the grammaticalization parameters introduced in Lehmann (2015 [1982]).

Furthermore, reviewing the wealth of typological findings, there is reason to assume that grammatical functions universally can be classified with the help of a finite, though not strictly limited number of relevant functional domains and basic grammatical distinctions. This assumption is the common denominator of typological research and cross-linguistic and comparative studies (Lehmann, 2015 [1982]; Perkins & Pagliuca, 1994; *WALS*). Modality and its major distinctions are one of these functional domains (cf. Section 2.2 for the specification of modal concepts used here).

As concerns the diachronic development of grammatical items, theoretical reasoning as well as empirical proof have allowed to establish developmental clines running from lexical items/constructions to grammatical items/constructions for many functional domains of grammar and for many of their more fine-grained

6. For examples see Hopper (1991, p. 22–29) and Hopper & Traugott (2003, p. 124–126).

categories. For the development of auxiliaries from lexical verbs in verbal periphrases in the domains of TAM categories, the possible diachronic scenarios including all decisive factors have been established in the works of many researchers, e.g. Lehmann (2015 [1982]), Bybee, Perkins & Pagliuca (1994), Hopper & Traugott (2003), Diewald (1999, 2020), Diewald & Smirnova (2010). From these and other studies, major changes in auxiliarization processes are known to be the following: morpho-phonological change (e.g. erosion, cliticisation, fusion etc.), syntactic change (reanalysis from lexical head to structural head, i.e. auxiliary, loss of the faculty of argument binding / valency etc.), semantic change (semantic abstraction via metaphorical and other cognitive processes in specific contexts), and functional change, i.e. change of the item's semiotic status from descriptive (characterizing, referential) to grammatical (= expressing paradigmatically organized, indexical functions). All of these changes co-occur in grammaticalization processes, and their successive compilation adds up to unidirectionally ordered stages of development. For modal auxiliaries or the perfect auxiliaries in Germanic languages, to cite well established examples, this means the following: i. the original lexical verb via abstraction loosens its selectional restrictions, e.g. starts taking inanimate, abstract subjects, and it is found with direct objects that do no longer represent concrete entities but propositional entities, i.e. nominalized verbs. As soon as the object position allows infinitive complements the first step towards syntactic auxiliarization is taken. As soon as the subject position is no longer restricted by the erstwhile lexical verb but receives its argument role (valency) from the non-finite complement, reanalysis from a lexical verb to an auxiliary in a verbal periphrasis has taken place. In further stages, the picture diversifies in dependence of the category in question, and the co-existing and competing linguistic elements. For the modal verbs of German this process is examined in its diachronic succession in Diewald (1999), for the evidentials *scheinen* ('shine', 'seem'), *drohen* ('threaten'), *versprechen* ('promise') and *werden* ('become') in Diewald & Smirnova (2010), and for German *scheinen* and English *seem* in Diewald & Stathi (2019) (cf. Section 3 for details necessary in the investigation of *verdienen*).

In short, it is possible to identify typical grammaticalization paths or channels delineating the developmental process from particular source items/constructions towards particular target items/constructions. This also holds for the functional domain of modality. As this domain is among the ones most discussed and investigated, we have ample general evidence of typical grammaticalization channels and stages of development (i.e. specific constructions in their relative chronological order) for individual modal meanings/functions. On these findings, together with the assumption that in synchronic co-existence the more grammaticalized constructions are diachronically later developments, we can base our specific hypotheses

concerning the rise of deontic modality meaning from the verb *verdienen* ‘earn’ (cf. 2.2 and Section 3 for details and literature).

A further important issue deserves mentioning. Both grammaticalization studies and constructional approaches have investigated items in their linguistic contexts, i.e. both have worked with constructions and their formal, semantic, and functional interrelations, which create manifold gradient transitions and in-betweens of virtually every aspect of linguistic structure (cf. Diewald, 2006).⁷ However, the problem of when to speak of a new construction in contrast to mere semantic or formal modification (i.e. polysemy, phonotactic variation, etc.) of an already existing one has remained unsolved. In grammaticalization theory this problem is less pressing, as the diagnosis of a new grammatical construction ultimately rests on functional criteria, i.e. integration into a grammatical paradigm, together with concomitant formal and semantic criteria. Constructional approaches, on the other hand, do struggle with the question of when to talk of an old (modified) construction (= constructional change) and when to talk of a new construction, i.e. a new sign having entered the inventory of language as a semiotic system (= constructionalization). One of the latest attempts solving this is ventured by Hilpert (2018, pp. 26–31). As the author himself states in his summary, there is not yet a final solution:

To summarize the main point of this section, I consider it an open question whether the distinction of constructionalization and constructional change should perhaps be complemented by another way of differentiating between types of change in the constructional network, and I suggested that dividing up types of change along the parts of the network they affect might be a useful alternative. Notably the differentiation between node changes and connectivity changes seems to hold some promise. All of these types would still be subsumed under the heading of constructional change, which signifies that the changes affect individual form-meaning pairs and their connections (cf. Hilpert, 2013, p. 13), and not the language system as a whole. (Hilpert, 2018, p. 31)

Hilpert relies on the definitions for constructional change and constructionalization offered in Traugott & Trousdale (2013) and referred to above. In this approach, constructional changes, on the one hand, are seen as “changes in meaning or form alone that affect individual constructions”, and constructionalizations, on the other hand, are defined as “changes that result in form_{new}-meaning_{new} pairings after a series of small-step constructional changes” (Traugott & Trousdale, 2013, p. 44;

7. Diewald (2006) aligns specific necessary stages in the diachronic development of grammaticalized modals to specific types of constructions, and argues for a close relation between diachronic construction grammar and grammaticalization.

cf. also Traugott, 2014, 2015, and Diewald 2015). As for constructional changes, Traugott (2014, p. 89) offers a specification, where constructional changes are seen as “changes to features of constructions, such as semantics (e.g. *wif* ‘woman’ > ‘married woman’) or morphophonology (e.g. *had* > ‘*d*’). Such changes precede or follow constructionalization”. As can be derived from this description the term “constructional change” is used as a summarizing label of semantic and phonological changes of various subtypes, all of which have been known in diachronic linguistics to occur independently as well as in grammaticalization processes.

Looking more closely at these definitions leads to the suspicion that they contain a logical inconsistency which may aggravate the persisting problem of distinguishing (new) constructions from modifications of constructions. If it is the case, as the authors assume, that there are always constructional changes in form or meaning as some sort of “preparatory” condition before true constructionalization (sign creation) takes place, then the definition of constructionalization as “form_{new}-meaning_{new} pairings” is erroneous. If there were preparatory changes in form or meaning that deviated from the prior construction and are kept in the new construction, then the latter per definition can never result in a sign that is a pairing of new-only components (which is not how language change works anyway). That is: The above definition ignores the constitutive function of the connection between a form and a meaning for the definition of a linguistic sign (i.e. construction). It is the newness of the connection between the formal and the semantic side that creates a new sign. This is, of course, the essence of de Saussure’s definition of a sign, as a unique and “primitive” association (i.e. connection) between a particular schema of meaning (“concept”, called “signifié”) and a particular schema of form (“sound-image”, called “signifiant”).⁸ In short, it is not only important to investigate relations between signs (or constructions) but also the fundamental semiotic link inside a sign or construction (the irreducible association of a *signifiant* and a *signifié*) which turns it into a linguistic entity to begin with.

Heeding this, the only correct definition of “constructionalization”, i.e. the coming into existence of a *new* sign, can be that it is a *new connection* of a form and a meaning (both of which may have been components of different signs before, i.e. both of which may be “old”). Adopting and adapting the notation suggested in Traugott & Trousdale (2013), constructionalization can be rendered as:

8. Cf. the definition of the linguistic sign as “a two-sided psychological entity” and its explanation: “The two elements are intimately united, and each recalls the other. Whether we try to find the meaning of the Latin word *arbor* or the word that Latin uses to designate the concept ‘tree’, it is clear that only the associations sanctioned by that language appeal to us to conform to reality, and we disregard whatever others might be imagined.” (de Saussure, 1983/1916, pp. 66f.).

Constructionalization (creation of a new sign):

form_{+/-new} – CONNECTION_{new} – meaning_{+/-new}.

That is, the question whether there is a new sign in the language cannot be answered by checking the newness of one or both of its structural components (*signifiant* and *signifié*), but only by looking at the essential connection between both, and by checking whether this is a new connection/association. This is done by using the known tests for syntagmatic and paradigmatic surroundings (oppositions) of the new sign, and in the case of grammaticalization by testing the degree of integration into a grammatical paradigm. In the following, we adhere to this conception of a new construction as a *new connection* of a form and a meaning, and apply this to our classification of the individual constructions of *verdienen* & X.

2.2 Deontic modality

Claiming that *verdienen* is on the rise as an auxiliary-like verb of deontic modality it is necessary to briefly lay out the definition of deontic modality we use here, its semantic specifications and its place in the general semantic domain of modality (cf. van der Auwera & Plungian, 1998). As modality like e.g. temporality is among the most widely investigated functional-semantic domains in language, it is out of the question to provide an overview of the whole area; thus, we have to confine ourselves to briefly marking our position. We treat modality from the perspective of grammaticalization theory as a functional domain that has (i) a more grammaticalized pole, which is relatively well defined as it pertains to (the expression of) grammatical mood, i.e. paradigmatic distinctions concerning indexical factuality judgements of whole propositions (verbal moods and corresponding periphrases) as well as the management and indication of illocutionary forces (cf. “sentence mood” etc.), and (ii) a more lexical pole, which encompasses several but loosely circumscribed semantic fields having to do with the characterization and evaluation of primary events by secondary (modal) predications (cf. Diewald, 1999, Lyons, 1977, Bybee, Perkins & Pagliuca, 1994, Lehmann (2015 [1982])).

We restrict the following discussion to those notions we need for an informed judgement on the deontic features of the different constructions with *verdienen*.

2.2.1 *Obligation and permission*

We define deontic modality in a narrow sense. Following Lyons (1977, p. 823) deontic modality “is concerned with necessity or possibility of acts performed by morally responsible agents” (see also Heine & Kuteva, 2002, p. 19). It is possible to unite all qualities implied in this statement in the two basic notions *obligation* and *permission*. Their common feature, which distinguishes them from volitional and

dispositional modalities, is the fact that they involve some entity as the source of a directive act, i.e. an entity issuing an act of obligation or permission. This entity is a specific instantiation of the modal source, which is a central component of any modal relation. Its specific features characterize the modal relation as a deontic one as opposed to volitional, epistemic etc. (Lyons, 1977, p. 824; Plank, 1981, p. 69, Diewald, 1999).

The modal source in deontic modality (as expressed e.g. by the German modal verb *sollen* ‘have to’, ‘shall’) is positioned outside the domain of the subject of the sentence, which can be noted by the feature [–internal] (Diewald, 1999, p. 94f.; cf. also the notion “extrasubjektiv” as proposed by Bech, 1951, p. 7). This distinguishes deontic modality from other types of modality, like e.g. volitional modality in which case the modal source is located in the subject of the sentence and assigned the feature [+internal] as e.g. in German *wollen* ‘want’, ‘wish’, ‘will’.

While the external location of the modal source is essential, additional features may lead to sub-types of deontic modality. As Lyons (1977, p. 825) points out, “different kinds of deontic modality can [...] be distinguished by specifying the source or cause of the obligation”. Features relevant for a more fine-grained sub-classification of deontic modality are e.g. the concreteness and animacy of the modal source (and also of the carrier/recipient of the deontic state, see below). This can be represented by the feature opposition [+/- diffuse], whereby typical deontic sources display the feature [–diffuse] as they typically are human agents (cf. Diewald, 1999, pp. 96f.).⁹ The distinction between weak obligation and strong obligation, which is often addressed in descriptions of modal meanings (e.g. Bybee, Perkins & Pagliuca, 1994, p. 186), and which is also relevant for the modal meaning in the case of *verdienen*, as it represents weak obligation (cf. the English translation by ‘should’) rather than strong obligation, can – partly – be put down to the specification of the modal source as more or less diffuse.

Apart from the modal source in deontic modality, there is another participant playing a major role in the deontic relation. It is the recipient/carrier of the deontic state, i.e. the entity that at the same time is conceived as the target of the command or permission and as the prospective agent fulfilling the action encoded in the infinitive construction. This role is prototypically encoded in the subject of the modalized sentence and it prototypically represents a human agent, i.e. it comes with the features [+internal], [–diffuse] (but see exceptions below under wide scope).

In short, in deontic modal relations expressing *obligation* and *permission* the modal source has the features [–internal] and [–diffuse]. The following examples

9. By this feature it is possible to distinguish deontic modals like *sollen* and *dürfen*, with a [–diffuse] modal source, from dispositional ones like *müssen* and *können*, with a [+diffuse] modal source, see Diewald (1999, p. 98).

with modal verb constructions with *sollen* (for ‘obligation’) and *dürfen* (for ‘permission’) represent prototypical cases:

- (5) *Die Teilnehmer sollen sich einen Überblick über das Bildungssystem verschaffen*
 The participant-PL.NOM should-AUX.MOD oneself-PL.DAT an-ACC
 overview-M.ACC of the education system-OBJ.PREP¹⁰ gain-INF
 ‘The participants *are to / are requested to / should* gain an overview [...]’
 (DWDS CC20)¹¹
- (6) *Sie dürfen eine eigene Meinung haben und uns kritisieren*
 They-NOM may-AUX.MOD an-ACC own point of view-F.ACC have-INF
 and us-ACC criticize-INF
 ‘They *are allowed to / are permitted to / may* have their own point of view and criticize us.’

Obligation (*sollen*) and permission (*dürfen*) share the two basic features mentioned above concerning the modal source: They both require an external modal source which is concrete. In both cases, there is someone (a person or institution or alike) not expressed in the sentence who has the role of the modal source, i.e. the issuer of a command directed at the subject *die Teilnehmer* in (5), and the issuer of a permission directed at the subject *Sie* in (6).

Beside this similarity between obligation and permission we also have to take into consideration that there is an important difference between these two deontic modal spheres concerning the sequence of the directive speech acts included in deontic modality: Obligation is initiated and enacted by the modal source, while in the case of permission, it is the recipient of the deontic modal impulse (the directive) who has initiated it. “Permission” actually means that the recipient has asked for it before and the modal source reacts to this request and issues a permission.¹³ That is, the modal source can be reactive (permission, *dürfen*) or non-reactive (obligation, *sollen*). In this way *dürfen* can be assigned the semantic feature [+reactive], whereas *sollen* receives the feature [–reactive] (Diewald, 1999, pp. 128f.). It should be noted that the opposition [–reactive] vs. [+reactive] is not restricted to deontic

10. OBJ.PREP stands for “prepositional object”.

11. Die Zeit, 22.12.1998, No. 53

12. Archiv der Gegenwart, 2001 [1985]

13. As always there are degrees of abstraction for this relation, e.g. the asking for it does not always take place in a literal way.

modality, where it is correlated with ‘obligation’ vs. ‘permission’ respectively, but is relevant in the classification of other subtypes of modality as well. For example, the opposition between the two volitional modal verbs in present-day German, *wollen* (‘want’, ‘intend’, ‘will’), and *möchten* (‘would like to’) as in *Sie will aufs Land ziehen* (‘She wants to move to the countryside’) vs. *Sie möchte aufs Land ziehen* (‘She would like to move to the countryside’), is parallel to the opposition between the deontic modals *sollen* and *dürfen*, insofar as *wollen* and *sollen* share the feature [–reactive], while *dürfen* and *möchten* share the feature [+reactive] (for an extended discussion of these feature distinctions see Diewald, 1999 and 2000).

Summing up, we can illustrate *sollen* (standing for obligation) and *dürfen* (standing for permission) using the basic semantic features concerning the modal source in deontic modality introduced so far as follows:

sollen: [–internal], [–diffuse], [–reactive]
 dürfen: [–internal], [–diffuse], [+reactive]

The above definition of deontic modality and the three types of features [+/–internal], [+/–diffuse], and [+/–reactive], will play an important role in analyzing the path of semantic development of the verb *verdienen* on its way of being grammaticalized as an auxiliary of deontic modality.

If needed, the semantic specification of these essential features for a deontic modal relation can be refined to distinguish notions like physical force, intersubjective power/status, moral obligation, general codes of behaviour, legal institutions, etc. These different types of modality are often expressed in speech act classes, speech act verbs and modal expressions (modal verbs, modal adverbs, nominalizations, etc.): *order*, *command*, *request*, *allow*, *be obliged*, *be required*, etc. As we are dealing with one modal expression only, it is not necessary to discuss this further. Instead, the stativity of modal predicates and the variations of scope require some comments.

2.2.2 *Stativity and scope*

Though deontic modality has to do with directive speech acts, it is very important to note that modalized sentences of the sort we are dealing with here (modal verb & infinitive construction) do not have a directive illocutionary force per se, i.e. they are not like imperatives. Instead, they are modal predicates representing the fact that a directive speech act has been performed. In short, deontic modal predicates express states that are the result of previous directive acts. This is reflected in the paraphrases given above in Section 2.2.1 for (5) ‘be to / be requested to / should’ and (6) ‘be allowed to / be permitted to / may’. A declarative sentence with a deontic modal construction is the representation of the fact that there exists an obligation /

a permission (a modal state) due to an earlier directive (cf. Lyons, 1977, pp. 828–36; Diewald, 1999, pp. 120f.). In the case of obligation, for instance, Lyons (1977, pp. 833f.) states: “the interpretation that is required, however, is one under which ‘obligate’ is taken to denote the state resulting from, initiated by, some previous event or act”.¹⁴ In short, modal predicates are stative (or better: stative-resultative) predicates,¹⁵ and, as they consist of a modal verb and an infinitival complement, they are complex stative predicates. The type of modality (permission, command, etc.) is then expressed in the modal verb, while the content of the directive is expressed in the non-finite part.

A further important notion for the interpretation of modal expressions (in particular verbal constructions) is “scope”. While this term is mostly used for the description of the semantic extension of adverbials (cf. verb phrase scope, sentential scope, utterance scope), it has proved an important notion in the investigation of the auxiliarization of verbal expressions towards modal auxiliaries (cf. Nordlinger & Traugott, 1997, who introduced this notion into the investigation of the grammaticalization of modal verbs; Diewald, 1999, who systematically applied this notion in the description of the successive steps in grammaticalization scenarios).

In an investigation of modal predicates, it is useful to distinguish two types of scope: *narrow scope modality* and *wide scope modality*. In case of narrow scope the deontic state is predicated of the subject of the sentence, which means that the subject is in the state of having been given an order or permission (by the modal source) to perform what is expressed in the infinitive complement. These are the uses of modal verbs which are commonly referred to as their ‘deontic’, ‘agent-oriented’ or ‘non-epistemic’ use (cf. Lyons, 1977; Plank, 1981).

In wide scope uses, the modal state is not predicated of the subject of the sentence, but of the whole proposition, which represents a similarity to the function of sentence adverbials. In the case of deontic modality this means that a state of permission/obligation applies to (modifies) the whole proposition. Sentences like the following ones illustrate wide scope readings with *dürfen*:

14. Cf. also Lyons (1977, p. 836): “To assert that an obligation holds is to perform the same kind of act as we perform when we assert that a proposition is true.”

15. Labels like “agent-oriented”, “dynamic”, etc. tend to blur this essential feature, namely, that modal verb constructions are stative: they predicate a modal state on the subject following from a directive given earlier. Thus, the subject of such a modal sentence is not so much an agent as a combination of three roles: former recipient of the underlying directive, actual carrier, i.e. experiencer, of the deontic state resulting from the directive, and prospective agent of the content of the directive.

- (7) *Es darf keine Parteien geben, die*
 It-NOM may-AUX.MOD no party-PL.ACC exist-INF which-REL
sich Sabotage zum Ziel gesetzt
 oneself-PL.DAT sabotage-F.ACC as goal-OBJ.PREP set-PST.PTCP
haben. (DWDS CC20)¹⁶
 have-AUX.PRF
 ‘It is not allowed/permitted/it may not come to the situation: There exist parties
 which regard sabotage as their goal.’
- (8) *Solidarität darf aber nicht mißbraucht werden [...]*
 Solidarity-NOM may-AUX.MOD but not misuse-PST.PTCP AUX.PASS
 ‘It is not allowed/permitted/it may not come to the situation: Solidarity is mis-
 used.’ (DWDS CC20)¹⁷

Both sentences show the non-epistemic reading of *dürfen*, i.e. the modal has a deontic meaning in the sense of social obligation/permission. At the same time, however, both modals obligatorily have wide scope. In (7) the wide scope is due to the expletive subject *es* in the idiom *es gibt* (‘there is/exists’), in (8) the wide scope is due to the passive morphology of the infinitive *mißbraucht werden*. The person that is the recipient of the prohibition (= negated permission) is not in subject position but is demoted and does not appear in the sentence at all. It can be reintroduced by transforming the sentence in question into a corresponding one with an active infinitive, as in (8’):

- (8’) *Niemand darf aber Solidarität mißbrauchen*
 Nobody-NOM may-AUX.MOD but solidarity-F.ACC misuse-INF
 ‘Nobody is permitted to/may misuse solidarity.’

Here, the agent of the action described in the infinitive appears as the subject (*niemand*, ‘no one’). The modal has narrow scope and predicates the state of being forbidden to complete the action denoted in the infinitive on the subject.

As is to be expected, there are often indetermined cases between different types of wide scope readings (e.g. “wide scope possibility” versus “epistemic possibility” as described in Gamon, 1993, pp. 125, 136, 153), and there are also cases of scope ambivalence. Sentences with a generic or indefinite animate subject are particularly prone to scope and meaning ambivalence (Gamon, 1993; cf. also Nordlinger & Traugott, 1997 for English modals). An example is given in (9):

16. Archiv der Gegenwart, 2001 [1989]

17. Archiv der Gegenwart, 2001 [1970]

- (9) *Dies muß man wissen, wenn man jetzt*
 This-ACC must-AUX.MOD you-NOM know-INF when you-NOM now
die Regierungspropaganda hört (DWDS CC20)¹⁸
 the government propaganda-F.ACC hear-PRS.3SG
 ‘You have got to realize this fact when listening to government propaganda.’
 (narrow scope)
 ‘It is necessary: you realize this fact when listening to government propaganda.’
 (wide scope)

In cases like these, the wide scope reading typically arises as a conversational implicature in the sense of Grice ([1975] 1989). It is the result of a reasoning procedure of the hearer in a specific communicative situation in which the narrow scope reading would not make much sense. In (9) it is unlikely that the speaker wants to predicate something on the subject which is realized by the indefinite pronoun *man*. Instead, the wide scope reading, expressing the general necessity that the proposition *Man weiß dies* (‘one knows this’) is true, is much more informative.

The development of wide scope readings is a prerequisite for the auxiliari- zation and grammaticalization of a modal verb towards a fully grammaticalized epistemic marker.¹⁹ In this latter, grammaticalized function the modal expresses a speaker-based factuality judgement concerning the whole proposition. An example of this would be *muss* in *Sie muss aufs Land gezogen sein* ‘She must have moved to the countryside’, ‘Probably, she has moved to the countryside’. The factuality judgement of a grammaticalized epistemic modal (i.e. an auxiliary of verbal mood) applies to the whole proposition, thus, by definition the modal has wide scope (cf. Diewald, 1999). While wide scope of a modal may occur in non-epistemic readings as the above examples (7) and (8) show, grammaticalized epistemic readings presuppose propositional, i.e. wide, scope of the modal verb.

This means that the existence of examples with wide scope interpretations (though still with e.g. deontic meaning) is an important indicator of a relatively advanced stage in the process of grammaticalization towards an auxiliary in the case of modals.²⁰ The following sections will show the stage of development of an assumed grammaticalization path that *verdienen* & infinitive complement has reached.

18. Archiv der Gegenwart, 2001 [1971]

19. The term “auxiliarization” focuses on the formal, syntactic and morphological aspects of the grammaticalization of full verbs and modal verbs into auxiliaries as parts of periphrastic verbal constructions; cf. also Heine (1993).

20. Depending on the grammatical category that is the “endpoint” of the grammaticalization / auxiliarization, the item in question may or may not require wide scope. In passive auxiliaries with patient or recipient arguments as subjects there is no wide scope; in mood and tense categories, however, wide scope is a necessary factor as tense and mood operate on whole propositions and not just on verb phrases.

2.2.3 *The rise of modal meaning*

While structural aspects of the grammaticalization of (modal) auxiliaries from lexical verbs have been addressed in Section 2.1, the following is concerned with tendencies and pathways of semantic change in that segment of the modal domain that is relevant for this study. As has been already mentioned, the rise of deontic meaning from verbs having a non-deontic, “merely” lexical meaning has received much less attention than the rise of epistemic meaning from non-epistemic, e.g. deontic meaning.²¹ Still, some observations can be found in diachronic studies on Germanic and Indo-European modals as well as in grammaticalization literature. Heine & Kuteva (2002) report on some non-deontic, more lexical sources for verbs (or other linguistic entities) expressing an ‘obligation’ or ‘permissive’ meaning. For the development *ability* > *permissive* they quote German *können* (Heine & Kuteva, 2002, p. 27f.), i.e. an old modal verb (a “perfecto-present”, cf. Diewald, 1999) which acquired an additional permission sense. As another source for permission, the authors refer to verbs meaning ‘get’: “GET (‘to get’, ‘to receive’, ‘to obtain’) > PERMISSIVE” (Heine & Kuteva, 2002, p. 147). This semantic development applies via the ABILITY stage, which *get*-verbs typically acquire. Bybee, Perkins & Pagliuca (1994, p. 191) point to the development of English *get* as in *get to* > ‘manage to’, ‘be permitted to’, e.g. *I get to sit on Santa’s lap*. The notion of ‘obligation’ as well tends to develop from verbs meaning ‘get’, as is noted in Heine & Kuteva (2002, p. 145) as “GET (‘to get’, ‘to receive’, ‘to obtain’) > OBLIGATION”, and in Bybee, Perkins, & Pagliuca (1994, p. 184), who provide the English example *I’ve got to study tonight*. According to Heine & Kuteva (2002, p. 119) another source for ‘obligation’ are verbs meaning ‘do’ or ‘make’, as Punjabi *kar* ‘do’.²²

Further hints on possible paths in the deontic domain can be gathered from the study by Ramat (1971) on modal verbs in Germanic languages as a morphosemantic field. Ramat shows that the modal meanings of *sollen* and *dürfen* originate in concepts that are based on an ideology of exchange of gifts, *sollen* originally meaning ‘be obliged to give something in return’, and *dürfen* meaning ‘be in need of something’. Ramat’s account strongly supports the definition of deontic modality as being founded in the interaction of morally responsible agents, which are the origins and/or destinations of a transfer of the “deontic content” (i.e. gifts, presents, deeds as obligations, and propositions). Ramat also shows that there is another,

21. For the change *deontic* > *epistemic* see e.g. Heine et al. (1991, pp. 176ff.), Traugott (1989), Nordlinger & Traugott (1997); for the development *ability* > *root possibility* > *possibility* see e.g. Bybee et al. (1994, p. 194); for *obligation* > *probability* see e.g. Bybee et al. (1994, pp. 224ff.), Diewald (1999) for German, Heine & Kuteva (2002 pp. 218f.); for the development of modal meaning in general also see Sweetser (1990).

22. For further possible source verbs in the deontic domain like *know*, *leave*, *need*, *owe* or *stop* see Heine & Kuteva (2002, p. 193, 215, 227, 243, 283).

similar source for a deontic modal in North-Germanic languages: the etymon of German *gebühren*, i.e. Swedish *böra*, Dan. *burde* (originally ‘be befitting’, i.e. ‘ziemlich sein’ ‘gehörig sein’, ‘gebührend sein’, see Ramat, 1971, p. 183), has developed from the meaning of ‘be befitting’ into expressing ‘obligation’ and ‘necessity’. Ramat (1971, p. 200) briefly points to Sanskrit where the verb *ārhati* with the original meaning ‘to be worthy’, ‘earn’, ‘deserve’ (‘verdienen’, ‘wert sein’) develops deontic modal meanings of obligation and permission as well as necessity.

3. Methods

The methodological procedures used in the present study include the following steps: (a) to identify (semi-schematic) constructions constituted by *verdienen*, (b) to determine a collostructional profile for each *verdienen*-construction identified, and (c) to categorize the most attracted collexemes into semantic groups.

3.1 Data and identification of constructions with *verdienen*

In view of the fact that the synchronic variation of constructions constituted by *verdienen* reflects its diachronic development from a fully lexical item into an auxiliary marker, the present study utilizes a large corpus of German, namely the DWDS Core Corpus for the 20th century (DWDS-Kernkorpus des 20. Jahrhunderts; Geyken, 2007), as a data source for retrieving the usage diversity of *verdienen*-constructions. It contains about 100 million words of written German in a balanced selection of texts from literary, scientific, journalistic, and non-fiction writing.

The data preparation for the present study proceeded as follows. First, all examples with the verb *verdienen* were extracted automatically from the DWDS Core Corpus. Second, they were checked manually to exclude the following instantiations with the verb *verdienen* from the data set and from further (collostructional) analysis: *verdienen* appearing (a) with pronouns referring to nouns in a preceding or following clause, as exemplified in (10), (b) with adjectives with quantitative meaning, as in (11), as well as (c) with object clauses, as illustrated in (12). These restrictions on co-occurring items are applied due to the fact that not functional elements, but lexical complements help to identify or rather co-determine the meaning of the corresponding construction. In addition, the observations with the verb *verdienen* itself occurring in passive form, as in (13), have also been discarded so that the syntactic status of the relevant co-occurring items, i.e. their object status, remains unchanged.

- (10) [...] *dass wir zuerst einmal in Urlaub fahren*
 that we-NOM first of all on holiday-OBJ.PREP go-INF
dürfen, denn verdient haben wir ihn
 allow-AUX.MOD because earn-PST.PTCP have-AUX.PRF we-NOM it-ACC
uns schon lange. (DWDS CC20)²³
 ourselves-ACC well in advance
 ‘... that we are allowed to take leave first of all, because we have earned it for us well in advance.’
- (11) *Er dachte wirklich nicht daran, mit dem*
 He-NOM think-PRET.3SG even not of with the
Trockenskikurs Ernst zu machen, wenn
 indoor skiing lessons-ADV.INS seriousness-M.ACC to make-INF if
er so wenig dabei verdient. (DWDS CC20)²⁴
 he-NOM so little by it earn-PRET.3SG
 ‘He, of course, did not even think of getting down to business with the indoor skiing lessons, if he was to earn so little money by it.’
- (12) *Die arme Ophelia hat es nicht verdient,*
 The poor Ophelia-F.NOM have-AUX.PRF it-ACC not deserve-PST.PTCP
dass sich jemand über sie mokiert
 that oneself-NOM anybody-NOM about her-OBJ.PREP mock-PRS.3SG
 ‘Poor Ophelia has not deserved to be mocked by anybody.’ (DWDS CC20)²⁵
- (13) [...] *damit man nicht sieht, wie viel in dem guten*
 so that one-NOM not see-PRS.3SG how much in the big
Geschäft verdient wird (DWDS CC20)²⁶
 deal-ADV.LOC earn-PST.PTCP AUX.PASS
 ‘... so that nobody can see how much is earned in the big deal.’

Third, the remaining examples representing the final data set were grouped manually according to their formal characteristics. Specifically, we identified three clusters of the observations with *verdienen* occurring with (a) nouns, (b) verbal complements in the passive infinitive form, and (c) verbal lexemes in the active infinitive form. It turned out that within the formal representation with nouns the verb *verdienen* varied in meaning. Consequently, the instantiations of this formal cluster were additionally sorted semantically in two classes. This resulted in

23. Brief von Alois Scheuer an Friedchen Scheuer vom 04.08.1940, Feldpost-Archive mkb-fp-0079

24. Völkischer Beobachter, Berliner Ausgabe, 17.03.1940

25. Die Zeit, 14.10.1999, No. 42

26. Vossische Zeitung, Morgen-Ausgabe, 04.03.1914

abstracting four semi-schematic form-meaning patterns, i.e. constructions, with *verdienen*. Examples are given in (14–17) (cf. also Section 1):

- (14) *Nach der Schule wollen viele arbeiten und
After the school-ADV.TMP²⁷ want-AUX.MOD many-NOM work-INF and
Geld verdienen* (DWDS CC20)²⁸
money-N.ACC earn-INF
‘After school, many want to work and earn money.’
- (15) *Das anregende Buch verdient in weitesten Kreisen
The inspiring book-N.NOM deserve-PRS.3SG in widest circles-ADV.LOC²⁹
Beachtung* (DWDS CC20)³⁰
attention-F.ACC
‘The inspiring book deserves attention in the widest possible circles.’
- (16) *Die Karten und Abbildungen verdienen
The map-PL.NOM and illustration-PL.NOM deserve-PRS.3PL
hervorgehoben zu werden* (DWDS CC20)³¹
emphasize-PST.PTCP to be-INF.AUX.PASS
‘The maps and illustration deserve to be emphasized.’
- (17) *Es wäre denn, daß der Historiker Ideen
It-NOM be-PRET.SUBJII.3SG because that the historian-M.NOM idea-PL.ACC
und Gesetze gäbe anstatt Tatsachen,
and law-PL.ACC present-PRS.SUBJII.3SG instead of fact-PL.ACC
Unwahrheit anstatt Wahrheit, so daß er nicht mehr ein
untruth-F.ACC instead of truth-F.ACC so that he-NOM no longer a
guter Erzähler, sondern ein schlechter Dichter zu heißen
good narrator-M.PRED but a bad poet-M.PRED to call-INF
verdiente.* (DWDS CC20)³²
deserve-PRET.3SG
‘Unless the historian presented ideas and laws instead of facts, untruth instead of truth so that he no longer would deserve to be called a good narrator but a bad poet.’

27. ADV.TMP stands for “temporal adverbial”.

28. Die Zeit, 02.09.1999, No. 36

29. Berliner Tageblatt, Morgen-Ausgabe, 03.03.1910

30. ADV.LOC stands for “local adverbial”.

31. Jahresberichte für deutsche Geschichte, 1939, p. 330

32. Mauthner, Fritz: Wörterbuch der Philosophie. In: Bertram, Mathias (Hg.): Geschichte der Philosophie, Berlin: Directmedia Publ., 2000 [1910], p. 25822

These sentences exemplify four constructions representing a combination of the verb *verdienen* with a schematic slot for nouns designating concrete entities (N_{CONCRETE}) as well as abstract concepts (N_{ABSTRACT}), past participle verbal complements ($V_{\text{PST PTCP}}$) as part of a passive infinitive and infinitive verbal complements (V_{INF}). The form and the meaning of these four constructions can be represented schematically, as in (18–21).³³ Since our focus is on the object slot of the constructions with *verdienen* the subject position has not been taken into consideration in the present paper.³⁴ In (20), the verb *verdienen* occurs with $V_{\text{PST PTCP}}$ -lexemes connected to the passive auxiliary *werden*. This passive auxiliary is considered as a fixed constituent of the construction appending the passive interpretation of the verbal complements to the constructional meaning.

- | | | |
|------|--|---------------------|
| (18) | <i>verdienen</i> + N_{CONCRETE} | <'to earn sth.'> |
| (19) | <i>verdienen</i> + N_{ABSTRACT} | <'to deserve sth.'> |
| (20) | <i>verdienen</i> + $V_{\text{PST PTCP}}$ + <i>zu</i> + <i>werden</i> | <'should be done'> |
| (21) | <i>verdienen</i> + <i>zu</i> + V_{INF} | <'should do'> |

In sum, the distillation of (semi-schematic) constructions with *verdienen* proceeded in a bottom-up fashion, viz. from instantiations to schematic representation through abstraction. Because of the fact that each *verdienen*-construction contains a schematic slot, it is important to identify lexical items which are strongly associated with the corresponding slot and at the same time co-determine the meaning of the construction they occur in. This can be performed by applying a quantitative procedure, namely a simple collexeme analysis, which will be presented in the next section.

In terms of important diachronic stages in the grammaticalization of modal items towards auxiliaries within modal verbal periphrasis, it should be noted that the four constructions isolated here for empirical treatment have been identified as corresponding to relevant stages due to the facts known about these general grammaticalization paths. The construction under (18) represents the full verb usages of *verdienen* with a concrete, typically animate subject and a concrete object, in close parallel to the basic construction of – for example – the modal verb *können* in Old

33. The *verdienen*-construction in (18) and (19) can be used with as well as without the reflexive pronoun *sich* (cf. *Außerdem haben wir uns eine Zigarre verdient* 'Besides, we have earned ourselves a smoke', DWDS Core Corpus, Lebert, Benjamin: Crazy, Köln: Kiepenheuer & Witsch, 1999 [1999], p. 133). The instantiations with *sich* additionally specify the recipient of EARN- and DESERVE-situations.

34. Doing so does not imply that the subject slot including its semantic and morpho-syntactic features is irrelevant. However, dealing with subjects properties would go beyond the scope of the present paper.

High German, which was primarily found with animate subjects, concrete direct objects, and did not take infinitives as complements (Diewald 1999, pp. 344–346). Constructions like the one in (19) show the loss of subject as well as object restrictions, and in particular, via the possibility of embedding a propositional concept in the still nominal direct object, provide a semantic precondition for a possible (later) reanalysis of the verb (which is still a full verb syntactically in 19) towards auxiliaryhood. Analogous constructions have been isolated e.g. for German *drohen* ('threaten') as its "critical context" on its way towards evidential meaning (Diewald & Smirnova, 2010, pp. 322–323). Construction (20) with a passive infinitive is an essential stage as it coerces a wide scope reading of *verdienen*, which due to the passive morphology of the infinitive does not provide an argument position for the subject. As Diewald (1999) shows this is an essential stage in the rise of more grammaticalized readings of the modal verbs in German. Wide scope is not dependent on passive morphology of the embedded infinitive and can be triggered by other factors. However, wide scope can easily be asserted in this construction on the basis of structural factors, which makes constructions like (20) valuable in ascertaining the existence of wide scope readings in actual examples (cf. also Nordlinger & Traugott, 1997). In a diachronic investigation on the rise of *verdienen* as a deontic modal, which has not yet been completed, this construction may turn out to be the isolating context for the new modal meaning which clearly separates it from the older more lexical meaning, which, in turn, includes an actional component and an agent-like role for the subject (for context types like critical context and isolating context, cf. Diewald, 2006). The construction in (21) represents the wide scope deontic modal meaning that is the current (preliminary) end-point of the grammaticalization of this verb. Its meaning is specific to this verb in opposition to other deontic modals (i.e. *sollen* and *dürfen* in modern German), and is dealt with in the discussion in Section 5.

In short, the four constructions identified and selected for the synchronic reconstruction of a grammaticalization path of *verdienen* are legitimized by the attested constructional stages of the grammaticalization paths of several modal and evidential verbs in German. Though, of course, the reconstruction of a diachronic pathway based on synchronic variation remains speculative until extended diachronic evidence has been brought forward, the one suggested here is based on solid evidence and knowledge of related cases so that the speculative component is minimized.

3.2 Simple collexeme analysis

In usage-based construction grammar, it is assumed that the meaning of a (semi-schematic) construction tends to harmonize with meanings of lexemes appearing in its schematic slot (see Hilpert, 2014, p. 392). Accordingly, the lexical items occurring in an empty slot of the corresponding *verdienen*-construction play an important role for understanding its meaning. In addition, not all lexical elements contribute to the same degree to a constructional meaning, viz. some items are more typical, whereas others are less typical or even untypical. The identification of the most central slot fillers for each *verdienen*-construction, which constitute the semantic core potential of each construction, is achieved in the present study by applying a simple collexeme analysis (Stefanowitsch & Gries, 2003). This quantitative technique aims to quantify the mutual association between the respective *verdienen*-construction and lexical elements of its schematic slot. As a result, this allows us to rank all lexemes according to their respective association, i.e. collocation, strength displaying co-occurrence typicality.

In the present paper, we use the G^2 statistic of the likelihood ratio test (Dunning 1993) for quantifying collocation strength (see Evert, 2008; Wiechmann, 2008; Pecina, 2010 for further possible association measures, and their pros and cons). This association measure has been chosen predominantly because of the following computational advantages: (a) it can calculate collocation strength for low frequency items in comparison to measures overestimating this, for example, pointwise mutual information (Church & Hanks, 1990); (b) it is able to provide quantitative scores at any rate and at all time in contrast to (the negative logarithm to the basis of 10 of) the p-value of Fisher-Yates exact test (i.e. the most frequently used measure in studies applying collocational analysis), which in cases of extreme high association provides only a not interpretable label “INF”.

The application of significance tests (i.e. the likelihood ratio test as well as the Fisher-Yates exact test) for computing collocation strength is frequently criticized because such applications violate the assumption of independence of observations (i.e. many observations can be produced by the same speaker) as well as the randomness assumption (i.e. constructions and lexemes are not distributed randomly) (see e.g. Schmid & Küchenhoff, 2013; Koplein, 2017). Having said that, the remaining association measures that are not based on inferential statistics possess the same problem: their scores can be biased to some extent as well, if for example the majority of observations are generated by one or two speakers (see Gries, 2015, pp. 518–519). In view of this, we utilize the G^2 statistic of the likelihood ratio test in spite of going against the assumptions of significance tests mentioned above.

The simple collexeme analysis computes the collocation strength, i.e. the G^2 -score, for each lexical item on the basis of the contingency table filled with the

frequency information retrieved from the corpus chosen. For performing this procedure, the following kinds of frequencies are needed: (a) the occurrence frequency of a given lexeme in a construction, (b) the overall frequency of that construction in the corpus, (c) the overall frequency of a given lexeme in the corpus, and (d) the overall frequency of all items in the corpus representing the functional category of a schematic slot of a construction.

Table 1 exemplifies which frequencies are required in this study for the verbal lexeme *genannt* ('named') occurring in the $V_{\text{PST PTCP}}$ slot of the *verdienen*-construction with the deontic (passivized) meaning 'should be done' (cf. (20) in 3.1) and can be easily queried in the DWDS Core Corpus for the 20th century.

Table 1. Input to a simple collexeme analysis for one lexical verb in the *verdienen*-construction

	<i>genannt</i> ('named')	\neg <i>genannt</i> ('named')	TOTAL
<i>verdienen</i> -cx	A 43	B (= 358 - A)	358
\neg <i>verdienen</i> -cx	C (= 8729 - A)	D (= 2138865 - (A + B + C))	C + D
TOTAL	8729	B + D	2138865

The lexeme *genannt* occurs 43 times in this *verdienen*-construction. The frequency of the *verdienen*-construction accounts for 358 occurrences in the DWDS Core Corpus. The overall frequency of the lexeme *genannt* (i.e. only in past participle form) in the DWDS Core Corpus amounts to 8729 tokens. The overall frequency of all items instantiated as past participles in the DWDS Core Corpus is 2138865. All these four frequencies are necessary to fill out the remaining cells of the contingency table and for then quantifying the mutual association between the *verdienen*-construction and the lexical item *genannt*.³⁵ After applying this procedure to all occurring items, they are ranked according to their collocation strength showing their usage typicality in (the schematic slot of) this construction.

3.3 Semantic classification of strongly attracted lexemes

In order to ascertain which semantic clusters are conceptualized by the most strongly attracted items of each *verdienen*-construction, we grouped the latter into semantic classes. Consequently, the most represented semantic groups will mirror the main semantic trend in usage behavior of the corresponding *verdienen*-construction.

35. We used the R-package "collocations" (Flach, 2017) for performing a simple collexeme analysis.

For this reason, we utilized the inventory of semantic categories for verbal and nominal meanings created by GermaNet, a lexical-semantic net that connects German nouns, verbs, and adjectives semantically by grouping lexemes expressing the same concept into synonymic sets (Hamp & Feldweg, 1997).³⁶ Despite the fact that GermaNet is organized in the form of semantic taxonomies of (nominal and verbal) concepts enabling to extract similarity scores between paired (meanings of) items that could be used consequently as input for such automatic categorization techniques as cluster or network analysis (see e.g. Gries & Ellis, 2015; Dekalo & Hampe, 2017), the classification procedure in this paper is performed manually.

The inventory of classes for verbal meanings consists of 15 groups, namely *possession, location, emotion, social situation, body, cognition, communication, competition, contact, natural phenomenon, creation, change, consumption, perception* and *stative situation*. The meanings of nouns are divided into 23 classes, namely *artifact, attribute, possession, relation, event, shape, feeling, group, body, cognition, communication, quantity, person, motive, food, natural object, natural phenomenon, location, plant, substance, animal, time* and *tops*. Notwithstanding that some classes are semantically considerably broad (e.g. verbal meanings of social situations describing various aspects of social events, which form one of the largest groups in GermaNet, and could be subdivided into a number of sub-categories), we apply these two classifications mostly because of the following reasons. First, an external semantic class inventory increases objectivity decreasing our subjective impact on class creation. Second, GermaNet seems to be the most comprehensive set of semantic categories for all German verbs and nouns available at the present time.

It was necessary to individually assess the most attracted complements identified by a simple collexeme analysis because the simple collexeme analysis is a form-based procedure not taking polysemy of slot-fillers into account. Therefore, we applied manual semantic categorization on the basis of the GermaNet semantic classes, and separated different senses of each item in its respective instantiations. What is more, the simple collexeme analysis is regarded as an explorative procedure which is used for ranking lexical items. It does not offer direct evidence for the reconstruction of the grammaticalization path of *verdienen*. Nevertheless, the results of this method are used for ascertaining the central semantic classes of the co-occurring lexemes, which allows us to understand the constructional variation of *verdienen*, i.e. steps within its diachronic development.

36. We thank the University of Tübingen (especially Prof. Dr. Erhardt W. Hinrichs) for granting us an Academic Research License to use GermaNet.

4. Results

The four *verdienen*-constructions under scrutiny differ greatly in their token frequency in the DWDS Core Corpus for the 20th century (see Table 2). The *verdienen*-construction expressing the lexical meaning ‘to deserve sth.’ is the most frequent construction, containing 1936 instantiations. The *verdienen*-construction with the meaning ‘to earn sth.’ indicates a token frequency of 1117 occurrences. The *verdienen*-construction with past participle verbal complements conceptualizing the grammatical meaning ‘should be done’ appears comparably rarely in written German, namely 358 times. Finally, the *verdienen*-construction with infinitive verbal lexemes is an extremely infrequent construction occurring only 58 times. The distributional tendency of the type frequency, viz. the number of unique lexical items in the corresponding schematic slot, is highly similar to that of the token frequency.

Table 2. Token and type frequencies of (slot fillers of) four *verdienen*-constructions

CONSTRUCTION	TOKEN FREQUENCY	TYPE FREQUENCY
<i>verdienen</i> + N _{CONCRETE}	1117	160
<i>verdienen</i> + N _{ABSTRACT}	1936	401
<i>verdienen</i> + V _{PST PTCP}	358	129
<i>verdienen</i> + V _{INF}	58	26

The most attracted lexical items (see Table 3, appendix) of the *verdienen*-construction with a schematic slot for nouns designating concrete entities possess low semantic variability. They represent primarily two semantic categories: possession and quantity. Nouns of possession comprise such lexemes as *Geld* (‘money’), *Brot* (‘bread’), *Lebensunterhalt* (‘livelihood’), *Unterhalt* (‘livelihood’), *Prämie* (‘bonus’), *Lohn* (‘wage’), *Zubrot* (‘extra income’), *Lebensbedürfnis* (‘life necessity’), *Taschengeld* (‘pocket money’), *Provision* (‘brokerage’), *Vermögen* (‘property’), *Cash* (‘cash money’), *Heidengeld* (‘a lot of money’), *Summe*₁ (‘money’),³⁷ *Westgeld* (‘West German money’). Another semantic group of central items includes nouns of quantity denoting diverse currency units and coins (*Mark*, *Dollar*, *Pfennig*, *Groschen*, *Taler*, *Heller*, *DM*, *Franken*, *Sou*, *Franc*, *Goldmark*, *Schilling*, *Mk*) as well as different amounts of quantity (*Million* (‘million’), *Summe*₂ (‘amount’)). The nouns of possession represent items operating as generic terms for nouns of quantity not specifying an exact amount earned.

37. Subscript numerals mean that a given item expresses more than one meaning within the corresponding construction. In other words, such items can be found in several semantic classes at the same time.

In contrast to the *verdienen*-construction expressing the meaning ‘to earn sth.’, the core potential of the collostructional profile (see Table 4, appendix) of the *verdienen*-construction occurring with nouns indicating abstract concepts semantically varies to a considerably higher degree. We assigned these nouns to the following six semantic domains: cognition, communication, event, attribute, feeling, natural phenomena. Such lexemes as *Beachtung* (‘attention’), *Name*₁ (‘reputation’), *Aufmerksamkeit*₁ (‘attention’), *Anerkennung*₁ (‘validation’), *Interesse*₁ (‘interest’), *Achtung* (‘respect’), *Bewunderung* (‘admiration’), *Respekt* (‘respect’), *Glauben* (‘belief’), *Behandlung*₁ (‘coverage’), *Verachtung* (‘contempt’), *Untersuchung*₁ (‘examination’) belong to nouns of cognition. Nouns of communication are represented by the items *Erwähnung* (‘mention’), *Name*₂ (‘name’), *Anerkennung*₂ (‘appreciation’), *Dank* (‘gratitude’), *Ehrentitel* (‘honorary title’), *Untersuchung*₂ (‘study’), *Ehrenname* (‘honorary name’), *Beiname* (‘surname’), *Beifall* (‘applause’). The lexemes *Lob* (‘praise’), *Hervorhebung* (‘emphasis’), *Strafe* (‘punishment’), *Nachahmung* (‘imitation’), *Verbreitung* (‘distribution’), *Behandlung*₂ (‘attention’), *Würdigung* (‘appreciation’), *Schonung* (‘protection’) are assigned as nouns of event. These three classes appear to be the largest ones. Another three semantic groups are comparatively underrepresented within the most attracted items: nouns of attribute (*Vorzug* (‘priority’), *Aufmerksamkeit*₂ (‘interest’), *Interesse*₂ (‘interest’), *Bezeichnung* (‘indication’)), nouns of feeling (*Vertrauen* (‘reliance’), *Mitleid* (‘compassion’)) and a noun of natural phenomena (*Tod* (‘death’)).

The typical items (see Table 5, appendix) of the *verdienen*-construction conceptualizing the grammatical meaning ‘should be done’ are extremely varied from a semantic point of view. They have been organized into 11 semantic categories. Verbs of communication (*hervorgehoben* (‘emphasised’), *erwähnt* (‘mentioned’), *bemerkt*₁ (‘commented’), *angemerkt* (‘commented’), *gewürdigt* (‘appreciated’), *gelobt* (‘praised’), *abgemeiert* (‘ruined’), *gebrandmarkt*₁ (‘marked’), *anerkannt*₁ (‘accepted’)) and verbs of cognition (*festgehalten* (‘recorded’), *beachtet* (‘respected’), *gelesen* (‘read’), *verachtet* (‘despised’), *anerkannt*₂ (‘recognised’), *aufgenommen*₁ (*in den Spielplan*) (‘included’), *geachtet* (‘respected’), *auseinandergenommen* (‘disconstructed, analyzed’), *betrachtet* (‘observed’)) are the most representative classes. Such semantic domains as perception, change, and social situation are constituted by fewer lexemes: verbs of perception (*bemerkt*₂ (‘noticed’), *vermerkt* (‘recorded’), *aufgenommen*₂ (‘received’), *registriert* (‘recorded’)), verbs of change (*gehängt* (‘hung’), *aufgeknüpft* (‘hung’), *eingesperrt* (‘locked-in’), *totgeschossen* (‘shot to death’)), social verbs (*genannt* (‘named’), *gebrandmarkt*₂ (‘denounced’), *aufgenommen*₃ (‘included’)). The remaining five semantic groups contain only a single exemplar: a verb of possession *entrissen* (‘snatched’), a stative verb *angereiht* (‘arranged’), a verb of contact *angebaut* (‘cultivated’), a verb of bodily activity *angespuckt* (‘spat

on'), a verb of creation *umgeschrieben* ('rewritten'), and a verb of emotion *angebetet* ('worshipped').

Similarly to the previously treated construction, the central lexical elements (see Table 6, appendix) of the *verdienen*-construction expressing the grammatical meaning 'should do' indicate a high semantic variability. Stative verbs appear to be the most salient category, including such items as *leben* ('live'), *fortleben* ('live on'), *sein* ('be'), *tragen* ('bear'), *wohnen* ('reside'). The lexemes *einnehmen* (*einen Platz*) ('occupy'), *kommen*₂ ('come') and *laufen* ('walk') are qualified as verbs of motion. The items *heißen*₁ ('mean') and *kommen*₁ (*zu Wort*) ('get a chance to speak') belong to verbs of communication. Such verbal complements as *eingehen* (*in die Geschichte*) ('go down in history') and *füllen* (*die Spalten*) ('fill the columns') represent verbs of change. The remaining semantic groups are represented by only a single element: a verb of cognition, namely *beschäftigen* ('deal with'), a social verb, *heißen*₂ ('be called'), a verb of bodily activity, *sterben* ('die'), and a verb of emotion, namely *genießen* ('enjoy').

5. Discussion

After introducing the four relevant semi-schematic constructions with *verdienen* in Section 3 and describing them with regard to their schematic nominal or verbal slot in Section 4, the question arises what these results tell us in terms of grammaticalization and what conclusions can be drawn from our synchronic data that support our hypothesis.

Our claim is that *verdienen* combined with an infinitive (cf. (3) and (4) in Section 1 and (16)–(17) in Section 3.1) is about to turn into a deontic modality construction, whereby *verdienen* is in a process of grammaticalization leading from a full lexical verb towards a modal auxiliary. Assuming that synchronic variation reflects diachronic development in grammaticalization with the less grammaticalized synchronic variants representing the diachronically older usages, we can interpolate a diachronic grammaticalization path from the observation of synchronic variation in degrees in grammaticalization. As shown in Sections 3 and 4, the item-driven analysis of slot-fillers of each *verdienen*-construction, viz. the ranking of the lexical elements according to their usage typicality and the semantic categorization of the most attracted lexemes, displays the central tendency in usage behavior. In connection with the concept of context expansion, especially with the notion of "host-class expansion" (Himmelman 2004), these data allow us to construct probable stages of the grammaticalization path of the verb *verdienen*. According to Himmelman grammaticalization can be regarded as a "process

of context-expansion” (2004, p. 32) happening on different levels and in different dimensions.³⁸ So, the elements *verdienen* is in construction with, i.e. its hosts, can change their semantic and morpho-syntactic class which leads to what is referred to as host-class expansion. Taking the object slot, Section 4 has shown that the object hosts of *verdienen* synchronically vary by expanding their semantic class from concrete to abstract (cf. 14 and 15 in 3.1) and their morpho-syntactic class from NP to verbal complement (cf. 15 and 16 in 3.1) and from passive infinitive to active infinitive (cf. 16 and 17 in 3.1).

According to these observations the grammaticalization path of *verdienen* towards a deontic modal can be conceived as follows, with “LEX” representing stages of (more) lexical usage, while “GRAM”, i.e. constructions with infinitival complements, are usages that are grammaticalized to some degree (cf. Sections 1 and 2 on the impact of infinitives in auxiliarization processes):

$$\begin{aligned} \text{LEX 1 (verdienen + N}_{\text{CONCRETE}}) &> \text{LEX 2 (verdienen + N}_{\text{ABSTRACT}}) > \\ \text{GRAM 1 (verdienen + V}_{\text{PST PTC P}} + \text{zu werden)} &> \text{GRAM 2 (verdienen + V}_{\text{INF}}) \end{aligned}$$

The rest of this section provides some further discussion of each of these stages.

Lex1 and Lex2

The first construction presents *verdienen* in combination with a concrete accusative object as a full verb, which is dynamic and refers to an action carried out by an animate (typically human) being. The full verbal scene includes someone doing something, which is typically associated with lexemes like *effort*, *duty*, *task*, *work*. As a result of this activity, the subject receives something in return that is represented by the accusative object, which in the most lexical construction LEX1 is constrained to the types of concrete nouns listed in Table 3 (see appendix). The construction LEX1, which is the source of the grammaticalization path of *verdienen* as a deontic marker, can be informally noted as below; (22) presents another typical example of this construction.

38. Cf. Himmelmann’s approach (1997), which differentiates between changes in semantics and pragmatics („Ausweitung des Gebrauchskontexts“, p. 28) and changes on the syntagmatic level. In addition to this, construction-internal and construction-external properties are taken into consideration as well (Himmelmann, 2004, p. 32).

Construction Lex1

Form: verdienen (& X) & NPACC (with NCONCRETE)

Meaning: 'to receive something in return for an action fulfilled'

Typical example:

- (22) *Sie wohnen in drei Zimmern und der Vater verdient 40 DM.*
 They-NOM live-PRS.3PL in three room-PL.ADV.LOC and the father-M.NOM
verdient 40 DM (DWDS CC20)³⁹
 earn-PRS.3SG 40 DM-F.ACC
 'They live in three rooms and their father earns 40 DM.'

LEX1 contains *verdienen* as a full verb in a transitive construction. Accordingly, it can be passivized, as in "*Viel Geld wird in der Erlebnis-Gastronomie verdient*" 'A lot of money is earned in event catering.'

The second construction superficially looks the same. However, in object position we have abstract nouns, often verbal nouns referring to a propositional content (*Beachtung, Hervorhebung, Anerkennung, Interesse*, see Table 4, appendix). This propositional content (as is typical for nouns) is neither tensed nor specified as to degrees of factivity. The 'interest', 'recognition', etc. may be granted to the subject at the time of utterance, or the speaker/writer claims that this is not the case but that this should happen in the future. In other words, the speaker/writer suggests that a certain state of affairs, which includes a socially relevant evaluation, applies to the situation. The core meaning of *verdienen* in this construction, which has been glossed here by 'deserve', contains an evaluative component (concerning quality and moral standards) which can be paraphrased as: 'Someone or something has a certain quality that is a good reason (in the eyes of the speaker/writer) for others to give some psychological/abstract gratification to this someone or something'. The major components of the construction LEX2 are given below together with a typical example in (23):

Construction LEX2

Form: verdienen (& X) & NPACC (with NABSTRACT, PROPOSITIONAL CONTENT, VALENCY)

Meaning: 'Someone or something has a certain quality that is a good reason (in the eyes of the speaker/writer) for others to give some psychological/abstract gratification to this someone or something'

39. Kursbuch, 1971, Vol. 24

Typical example:

- (23) *Die Edition verdient die größte Anerkennung*
 The edition-F.NOM deserve-PRS.3SG the-ACC greatest appreciation-F.ACC
 ‘The edition deserves the greatest appreciation.’ (DWDS CC20)⁴⁰

In LEX2, *verdienen* is no longer a simple transitive action verb (cf. the impossibility of the passive of *verdienen* here: **Durch die Edition wird große Anerkennung verdient*). In this construction, we no longer have a transitive scene: the subject is no longer an agent of an activity, there is neither intention nor effort. Though some of these meaning components may be present in some examples, they represent concomitant, non-obligatory features of this construction.

Movement along the grammaticalization path from LEX to GRAM

Looking at the first step of the grammaticalization path, i.e. from LEX1 to LEX2, it is apparent that both constructions exhibit the same formal characteristics, in particular the syntactic structure concerning their slot-fillers in complement position. They vary merely in the abstractness of the lexical items. Thus, at first sight these constructions, due to their formal similarity, might be regarded as a single construction attracting nouns of diverse semantics. However, as we define a construction as a fixed association of a *signifiant* and a *signifié* (see Section 2.1), and as the syntactic and semantic features of LEX1 and LEX2 differ considerably in a systematic way, it is a necessary conclusion that we are dealing here with two different constructions, with two substantially different meanings (which receives additional support by the structural differences mentioned above, in particular, accessibility to passivization).

With reference to general principles of semantic change in grammaticalization (concrete > abstract, etc.) and empirically observed instances of change (cf. literature in 2.2.3), we assume that the construction with the meaning ‘to deserve sth.’ (LEX2) has emerged from the construction with the meaning ‘to earn sth.’ (LEX1) through host class expansion. In line with this, the novel items with ambiguous meanings (concrete / abstract) commence to appear in the schematic slot causing the collostructional shift to lexemes conceptualizing abstract semantics changing the meaning of the whole construction, cf.:

40. Jahresberichte für deutsche Geschichte, 1927, p. 583

- (24) *Die einzige Gewalt, die hier noch den*
 The only power-F.NOM that-REL here still this-ACC name-M.ACC
Namen verdient, ist die der Massen
 deserve-PRS.3SG be-PRS.3SG the one-NOM (of) the masses-PL.GEN
und der Regierungen. (DWDS CC20)⁴¹
 and (of) the governments-PL.GEN
 ‘The only power that still deserves this name is the one of the masses and of
 the governments.’

Relating to common knowledge concerning semantic change via metaphorical extension in grammaticalization processes, we contend that this collostructional shift is motivated by prototypical metaphorization processes, which triggered changes in the semantics of slot-fillers from concrete observed entities (e.g. *Dollar, Mark, Geld, Vermögen*) to abstract unobservable concepts (e.g. *Anerkennung, Dank, Lob*).

Considering the development from LEX2 to GRAM1, we can observe the change in the functional category of slot-fillers, i.e. from nouns in accusative case to passive infinitives, i.e. main verbs in past participle form with *zu werden*. This concerns modifications in the formal realization of co-occurring lexemes. Examining the typical items of these two constructions, it is discernible that the most representative semantic categories in both constructions represent complements conceptualizing the domains of communication and cognition. In addition, it is noticeable that numerous items in both core domains possess the same lexical base: communication (*Erwähnung, Anerkennung₂* vs. *erwähnt, anerkannt₁*) or cognition (*Beachtung, Anerkennung₁, Achtung, Verachtung* vs. *beachtet, anerkannt₂, geachtet, verachtet*).⁴² This is illustrated by the following examples, with (25) showing the noun *Erwähnung*, and example (26) the past participle *erwähnt* in a passive construction (*erwähnt (zu) werden*).

- (25) *Schließlich verdienen noch die spezifischen Interessen*
 Finally deserve-PRS.3PL also the specific interest-PL.NOM
West-Berlins eine besondere Erwähnung (DWDS CC20)⁴³
 (of) West-Berlin-GEN a-ACC special mention-F.ACC
 ‘Finally, the specific interests of West-Berlin, too, deserve a special mention.’

41. Habermas, Jürgen: *Strukturwandel der Öffentlichkeit*, Neuwied: Luchterhand, 1965 [1962], p. 147

42. Analogous observations concerning the change of complementation patterns from abstract verbal nouns to infinitives encoding the same verbal scene have been made with respect to the grammaticalization of *drohen* and other evidential verbs in Diewald & Smirnova (2010).

43. Kursbuch, 1966, Vol. 4

- (26) *Ein Gebiet aus Fricks vielseitiger Tätigkeit*
 One field-N.NOM of Frick's-GEN versatile occupation-ATT.PREP⁴⁴
verdient jedoch besonders erwähnt zu werden
 deserve-PRS.3SG however especially mention-PST.PTCP to be-INF.AUX.PASS
 'One field of Frick's versatile occupation, however, especially deserves to be
 mentioned.' (DWDS CC20)⁴⁵

Consequently, we assume that the jump between two different syntactic categories representing empty slots filled by lexical elements is in part motivated by the overlapping meanings found in the item-driven collostructional behavior. This means that the change of syntactic categories representing empty slots does not proceed accidentally, but is rather motivated by internal lexeme-based properties of a construction a grammaticalizing element occurs in.

Gram1 and Gram2

The third construction (GRAM1) has an infinitival complement, which is known to be the first (visible) step towards auxiliariation (see Bolinger, 1980). The infinitival complement is in the passive: the subject of the finite verb *verdienen* is also the "psychological subject" of the passive infinitive, i.e. there is subject control. While the subject due to the passive infinitive loses its agent-hood in the situation expressed by the complement, the "others" (the speaker or (parts of) society) are up-graded to the agents of the passive infinitive complement. Due to the passive they are not on-stage, but they could be introduced by a *von*-phrase, and are cognitively implied by the passive voice. As has been shown in Section 2.2.2, the passive infinitive in complement position in modals is one of the syntactic contexts that "automatically" trigger a wide scope reading, at the same time keeping the "old" meaning. Thus, the third construction strengthens the semantic component of a social or moral evaluation being issued by a conceptualizer, who is external to the scene but able to be introduced into it. Central aspects of GRAM1 are summarized below and illustrated by a typical example in (27):

Construction Gram1

Form: verdienen (& X) & V_{PST PTCP} + zu + werden

Meaning: 'Someone or something in the eyes of the speaker/writer should be given psychological/abstract gratification (by someone).'

44. ATT-PREP stands for „prepositional attribute”

45. Der Nürnberger Prozeß, Berlin: Directmedia Publ., 1999 [1946], p. 5433

Typical example:

- (27) *Im Rückblick auf das Geleistete verdienen zwei Tatsachen*
 In retrospect of the achievements deserve-PRS.3PL two facts-PL.NOM
gewürdigt zu werden. (DWDS CC20)⁴⁶
 appreciate-PST.PTCP to be-INF.AUX.PASS
 'In retrospect of the achievements two facts deserve to be appreciated.'

This is very close to wide scope deontic modality constructions with verbs like *dürfen* (cf. (7) and (8) in 2.2.2). The fact that there is a passive infinitive, however, still keeps up the notion of action on the part of the conceptualizers (they have to do something); thus the conceptualizer is not yet a deontic modal source in the strict sense (i.e. the issuer of the underlying directive).

The fourth construction sheds this restriction by allowing active infinitives. Neither the subject nor conceptualizers are involved in the action. Instead the speaker/writer states that there exists a moral obligation concerning the proposition. An extended paraphrase for the core meaning of the fourth construction is: 'According to the speaker/writer there exists a weak obligation concerning the proposition, which is motivated by (some element of) the content of the proposition.' The actional component has disappeared in this construction. However, the reactive component, i.e. that there is something in the situation itself that triggers some kind of obligation, is still present. It has even been strengthened.

This reactive component can be traced back to the very component in lexical *verdienen* (see LEX1); i.e. this semantic feature persists and gets reinterpreted as "(weak) moral obligation". The reactive component in the lexical verb *verdienen* 'earn sth.' is different from the one in "old" modal verbs (preterito-presents), but, nevertheless, it is genuinely reactive insofar as it means that the subject (= the person/entity that earns something) has induced the situation expressed by the verb *verdienen* (i.e. being the (future) recipient of the "thing" earned) by some former action, without being fully in control of the completion of the transaction. This relation of 'prior instigation' is reinterpreted and abstracted in the more grammaticalized meaning of *verdienen*, and thus provides the feature [+reactive]. Its presence can be checked by substituting *verdienen* in examples like (28) below by a paraphrase using *sollten*, which has the feature [-reactive] instead of [+reactive] (*Sie verdienen klassisch zu werden* > *Sie sollten klassisch werden*). The outcome of such a substitution is devoid of the original meaning component [+reactive]: There is no pointing to some prior instigation motivating the weak moral obligation. Thus, the feature [+reactive] can be regarded as the specific distinctive feature of *verdienen* in its more grammaticalized usages as opposed to other deontic modals expressing obligation. The construction and an example are given below:

46. Völkischer Beobachter (Berliner Ausgabe), 09.03.1940

Construction Gram2:

Form: verdienen (& X) & V_{INF}

Meaning: 'Some event should happen / some state should hold due to some (moral) circumstances'

Typical example:

- (28) *Es gibt Stellen darin, die klassisch zu werden verdienen, die in ein Lesebuch gehören [...]* (DWDS CC20)⁴⁷
 It-NOM exist-PRS.3SG part-PL.ACC inside-ADV.LOC that-PL.REL classic to become-INF deserve-PRS.3PL that-PL.REL into a reader-ADV.LOC belong-PRS.3PL
 'It contains parts that deserve to become classic that need to go into a reader.'

Regarding the last stage of the grammaticalization path constructed, i.e. from GRAM1 to GRAM2, it is obvious that the restrictions concerning the syntactic categories of the lexical elements in complement position differ between both stages: They change from V_{PST} PTCP + *zu* + *werden* in GRAM1 to V_{INF} in GRAM2. Despite the fact that stative verbs are the largest semantic class for the *verdienen*-construction with the meaning 'should do'⁴⁸ (GRAM2) which are not typical for the construction expressing the meaning 'should be done' (GRAM1), we could find the following coinciding semantic groups: communication, cognition, change, body, emotion, social situation. Needless to say, this study does not contain enough observations of the construction with infinitive verbal complements (GRAM2) in order to assess the semantic direction of its lexical items conclusively. GRAM2 possesses lexemes of extreme semantic variability allowing merely to state that the V_{INF}-slot is not restricted in its early stage of grammaticalization to some special types of lexemes. Accordingly, this construction should be a considerably productive construction in terms of the grammaticalization process.

6. Conclusion

Contending that synchronic variation together with known facts on grammaticalization channels can be used as evidence for ongoing grammaticalization, this paper has shown that the verb *verdienen* is used in an array of constructions that points to ongoing grammaticalization, whereby the construction of *verdienen* with infinitive

47. Auerbach, Erich: Mimesis, Bern: Francke, 1959 [1946], p. 476

48. It should be kept in mind that – obviously – the use of the verb *do* in the notation of the constructional meaning of GRAM2 does not imply actional semantic; *do* is used as a pro-form for any verb in the simple infinitive.

is on the way of developing into a deontic modal construction. By investigating 20th century data of *verdienen* and its complement slot we identified four relevant constructions that can be ordered in terms of a grammaticalization channel for modal constructions. LEX1 with the meaning ‘earn’ occurring with concrete objects and animate subjects represents a fully lexical construction. LEX2 has more abstract objects, but still lexical semantics. The step towards grammaticalization is taken when an infinitive complement with a passive infinitive is added. This is GRAM3; it shows a change of meaning towards deontic modality. GRAM 4 finally attracts active infinitives and all types of abstract subjects. Its meaning is very close to ‘should’. The data allow us to conclude that the grammaticalization of *verdienen* & infinitive towards modal meaning is on its way, but has not (yet?) reached the stage of epistemic modality, i.e. a speaker-based factuality judgement.

This grammaticalization path, reconstructed from synchronic variation, is not an idiosyncratic one. Instead, it follows confirmed paths for the development of deontic modality markers. Some of the source concepts for new deontic meanings presented in earlier grammaticalization studies (in particular, *get/receive*-verbs) are similar to the source concepts and constructions we made out for lexical *verdienen*: ‘getting something due to some prior action’. In the light of this evidence, we suggest that the semantic change of *verdienen* towards a deontic modality meaning re-iterates the paths of semantic change that have led to the present-day meaning of several modal verbs in the Germanic languages.

The present study has focused primarily on lexemes occurring in an open slot of the corresponding construction, which has allowed us to explain the changes during the grammaticalization of the verb *verdienen*, whereas the feature specific properties of the four constructions were not included into the empirical investigation. An investigation into these, which will help to better understand how functional changes occur on the way from lexical to grammatical constructions, and thus to complete the picture, is under way.

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Appendix

Table 3. Lexical items 1–30 of the *verdienen*-construction with the meaning 'to earn sth.'

RANK	LEX.ITEM	CORPUS.FREQ	CX.FREQ	COLL.STR
1	Geld	17243	450	5010.64
2	Brot	3834	103	1114.28
3	Lebensunterhalt	492	73	1046.40
4	Mark	16869	87	651.97
5	Sporen	406	22	267.80
6	Unterhalt	638	22	247.49
7	Dollar	5094	26	192.86
8	Pfennig	2129	20	172.57
9	Groschen	592	11	109.88
10	Taler	697	11	106.27
11	Prämie	610	9	85.71
12	Lohn	3328	11	71.98
13	Zubrot	8	4	68.63
14	Heller	77	4	48.28
15	Lebensbedürfnis	140	4	43.41
16	Taschengeld	228	4	39.47
17	Provision	286	4	37.65
18	Vermögen	3830	7	37.64
19	DM	6273	8	37.43
20	Million	17123	11	37.20
21	Franken	2217	6	36.87
22	Sou	62	3	35.77
23	Cash	7	2	31.48
24	Heidengeld	12	2	29.04
25	Summe	4557	6	28.44
26	Franc	938	4	28.17
27	Goldmark	218	3	28.14
28	Schilling	947	4	28.09
29	Mk	1057	4	27.22
30	Westgeld	27	2	25.60

Table 4. Lexical items 1–30 of the *verdienen*-construction with the meaning ‘to deserve sth.’

RANK	LEX.ITEM	CORPUS.FREQ	CX.FREQ	COLL.STR
1	Beachtung	2009	347	4750.39
2	Erwähnung	813	116	1524.76
3	Name	26383	140	903.97
4	Vorzug	2230	58	556.25
5	Aufmerksamkeit	5131	65	529.64
6	Anerkennung	5268	60	475.99
7	Dank	3463	46	378.74
8	Lob	1316	38	372.08
9	Interesse	26010	66	328.19
10	Vertrauen	6080	41	282.08
11	Achtung	2715	28	216.11
12	Hervorhebung	289	18	204.30
13	Bezeichnung	5252	28	179.43
14	Bewunderung	1117	20	176.37
15	Strafe	4038	24	158.91
16	Respekt	1153	12	92.74
17	Tod	17909	24	89.54
18	Nachahmung	961	11	87.10
19	Glauben	6385	17	85.71
20	Verbreitung	2469	12	74.61
21	Behandlung	7363	16	74.37
22	Ehrentitel	171	7	73.39
23	Mitleid	1415	10	69.57
24	Würdigung	878	9	69.27
25	Verachtung	991	9	67.10
26	Untersuchung	11451	16	60.89
27	Ehrenname	61	5	59.56
28	Beiname	250	6	56.41
29	Beifall	3345	10	52.64
30	Schonung	455	6	49.19

Table 5. Lexical items 1–30 of the *verdienen*-construction with the meaning ‘should be done’

RANK	LEX.ITEM	CORPUS.FREQ	CX.FREQ	COLL.STR
1	hervorgehoben	1588	63	577.74
2	genannt	8729	43	213.02
3	erwähnt	4054	19	91.02
4	festgehalten	1534	14	85.14
5	bemerkt	2752	15	76.09
6	angemerkt	116	7	69.03
7	gewürdigt	753	8	50.92

RANK	LEX.ITEM	CORPUS.FREQ	CX.FREQ	COLL.STR
8	beachtet	1313	9	49.54
9	entrissen	339	6	44.25
10	gehängt	388	4	25.18
11	angereiht	18	2	22.24
12	vermerkt	716	4	20.37
13	gelobt	353	3	17.73
14	abgemeiert	2	1	14.62
15	gebrandmarkt	136	2	13.99
16	gelesen	3289	5	13.23
17	aufgeknüpft	14	1	10.19
18	verachtet	361	2	10.14
19	eingesperrt	364	2	10.11
20	angebaut	420	2	9.55
21	angespuckt	21	1	9.36
22	anerkannt	3410	4	8.76
23	umgeschrieben	29	1	8.70
24	aufgenommen	1710	3	8.70
25	registriert	533	2	8.64
26	totgeschossen	31	1	8.57
27	geachtet	566	2	8.41
28	auseinandergenommen	34	1	8.38
29	betrachtet	1817	3	8.37
30	angebetet	42	1	7.96

Table 6. Lexical items 1–14 of the *verdienen*-construction with the meaning 'should do'

RANK	LEX.ITEM	CORPUS.FREQ	CX.FREQ	COLL.STR
1	heißen	1925	8	67.19
2	leben	6094	4	18.76
3	einnehmen	1642	2	11.72
4	fortleben	73	1	10.66
5	eingehen	2724	2	9.75
6	sein	114325	9	9.16
7	tragen	7188	2	6.08
8	füllen	777	1	5.95
9	kommen	20206	3	5.84
10	wohnen	1233	1	5.05
11	genießen	1325	1	4.91
12	laufen	1793	1	4.33
13	beschäftigen	1835	1	4.28
14	sterben	2210	1	3.93

* This table contains only significant attracted verbal lexemes.