A2 Dimensional verbs

1 General Information

1.1 Applicants

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1.2 Topic

Dimensional verbs

1.3 Scientific discipline and field of work

General and Romance Linguistics, Verb Semantics, Contrastive Linguistics and Typology, Historical Linguistics and Semantic Change, Linguistics of German, French, Georgian, and Korean

1.4 Scheduled total duration

Six years

1.5 Application period

Three years

1.6 Summary

The project explores dimensional verbs such as *wiegen* 'weigh' or *wachsen* 'grow' which encode a dimension (WEIGHT and SIZE, respectively) and in addition allow for the external specification of a value along this dimension as in <u>*10 Kilogramm*</u> *wiegen* 'weigh 10 kilograms' and <u>*um 1 Meter*</u> *wachsen* 'grow 1 meter'. The investigation considers different subclasses of dimensional verbs (dynamic vs. stative, transitive vs. intransitive) and their relation to non-dimensional verbs. The phenomenology of dimensional verbs will be approached from a comparative perspective for German, French, Georgian, and Korean. With respect to French and Georgian we also focus on the historical development of dimensional verbs. We will examine the different semantic and syntactic processes which lead to dimensional verbs and elucidate the relation between dimensional verbs and functional nouns.

2   State of the art, preliminary work

2.0 Relevant phenomena

Definition of 'dimensional verb'

Dimensional verbs such as *kosten/coûter* 'cost', *wiegen/peser* 'weigh', *heißen/s'appeler* 'be called' encode a dimension (attribute) of the subject referent and, in addition, allow for the realization of a specific value along this dimension. Dimensional verbs (henceforth: DVs) systematically correspond to functional nouns and dimensional adjectives, as illustrated by the German examples in (1).

> (1) a. *Der <u>Preis</u> der Äpfel beträgt drei Euro.*
>   'The price of the apples is three euros.'
>
>   b. *Die Äpfel sind drei Euro <u>teuer</u>.*
>   lit.: 'The apples are three euros expensive.'
>
>   c. *Die Äpfel <u>kosten</u> drei Euro.*
>   'The apples cost three euros.'

All of the variants in (1) specify the value *drei Euro* 'three euros' for the attribute 'price'. However, in the nominal variant in (1a), this dimension is explicitly referred to by the functional noun *Preis*, whereas in the adjectival variant (1b) the choice of the dimensional adjective *teuer* indicates the dimension the adjective relates to. Finally, in the verbal variant in (1c), the verb *kosten* encodes the specific dimension without explicitly referring to it. The project explores the grammatical and semantic properties of the last variant and its relation to the other two options.

A2

Types of dimensional verbs

DVs can be characterized with respect to various criteria. First, there are DVs, such as German *kosten* 'cost' in (2a) or French *sentir* 'smell' in (2b), which can be used **absolutely**. In this case the specification of the value is inherent:

(2) a. *Die Äpfel kosten* [= kosten viel]

   lit.: 'The apples cost [= cost much]'

 b. *Ce chien sent* [= sent mauvais]

   'This dog smells [= smells bad]'

Second, some verbs such as the German verbs of location in (3) encode **two dimensions**. Both of the verbs in (3) explicitly specify the spatial location of the subject referent by means of a PP but in addition involve an inherent specification along another dimension: *kleben* 'stick' in (3a) explicates the kind of contact, while *hocken* 'crouch' refers to a special kind of posture.

(3) a. *Ein Kaugummi klebt unter dem Tisch.*

   lit.: 'A chewing gum sticks under the desk.'

 b. *Sie hockten in der Ecke.*

   'They were crouching in the corner.'

Third, in addition to primary or 'born' DVs there are also **secondary** DVs which derive from non-dimensional verbs by way of some specific process, such as the middle in the French example in (4a) or the generic interpretation in the German example in (4b).

(4) a. *Ce pull se vend bien.*

   'This pullover is selling well.'

 b. *Gold schmilzt bei 1064 Grad Celsius.*

   'Gold melts at 1064 degrees Celsius.'

All the DVs illustrated so far are stative DVs (= SDVs). SDVs constitute the simplest instances of DVs, since they lack event structure. However, there are also dynamic DVs (= DDVs) which differ from SDVs in denoting a change along a given dimension. For example, the DDVs *wachsen* 'grow' and *se prolonger* 'be extended' in (5) refer to a change with respect to the dimension of size and length.

(5) a. *Das Industriegebiet ist gewachsen.*

   'The industrial area has grown.'

 b. *Les vacances se sont prolongées.*

   'The vacation has been extended.'

DDVs can be further subclassified according to their argument structure. The examples given above are intransitive DDVs, which relate a dimension-specific change to the subject referent. By contrast, transitive DDVs, such as *vergrößern* 'enlarge' und *prolonger* 'extend' in (6), express a change inside a dimension with respect to the object referent while the subject referent is understood as the causer of change.

(6) a. *Sie haben das Industriegebiet vergrößert.*

'The have enlarged the industrial area.'

b. *Ils ont prolongé les vacances.*

'They have extended the vacation.'

2.1 State of the art

Dimensional verbs have not yet been studied at great length. There has been research on the verb classes dimensional verbs belong to, such as verbs of perception (Evans & Wilkins 2000, Sweetser 1990, Viberg 1984), verbs of measuring (Kegl & Fellbaum 1988, Klooster 1978, Na 1986), and verbs of location (Jackendoff 1990, Kaufmann 1995). However, the research on these classes focuses on very different phenomena inherent to the specific verb classes. Eschenbach (1995) sketches a formal analysis of the verb *wiegen* 'weigh', relating it to the underlying functional noun *Gewicht* 'weight'. In addition, there are a number of analyses of dimensional adjectives (Bierwisch 1987, Kennedy 1999, Lang 2001, Löbner 1990) that draw heavily upon the notions of 'function' and 'dimension'. However, they are confined to grad-able adjectives; Bierwisch and Lang limit themselves to adjectives such as *long*, *narrow*, and *small* which refer to the three dimensions of objects in the Cartesian coordinate system. Since dimensional verbs are not restricted to scalar dimensions, the analyses cited above can only partially be adopted. Recently, Kennedy & Levin (2007) proposed a scalar analysis of the verb 'cool' (Dowty's 1979 *degree achievement*), which also integrates the underlying dimen-sion of the verb. Their approach can be discussed against the background of the German di-mensional verbs *abkühlen* and *erkalten* 'cool down', which are more explicit due to their pre-fixes.

Furthermore, by licensing a phrase that can be used predicatively or referentially dimen-sional verbs are similar to the copula *sein* 'be' and its dynamic counterparts (as in *schmeckt süß* 'tastes sweet' vs. *kostet 3 Euro* 'costs 3 euros'). Their similarity to the copula is also re-flected in the fact that they can be paraphrased by copula constructions. Other topics dis-cussed in relation to the copula, such as the stage-level/individual-level-distinction, the event-reference of copula constructions and the aspectual properties of stative verbs (Geist 1999, Maienborn 2003, Katz 1995, Steinitz 1999), are not central to the project.

Intransitive and transitive dynamic DVs belong to the classes of inchoative and causa-tive verbs central to numerous theories of decomposition and linking. Traditionally, these classes are represented using semantic templates which contain BECOME and CAUSE as class-defining decomposition predicates. However, little has been said about the predicate, which constitutes the lexeme-specific 'root' such as COLD(X) in the decomposition of *cool* as BECOME(COLD(X)). Levin (2005) asserts that these roots belong to a small set of ontological types that comprise STATE, STUFF, and PLACE. In our view, these ontological types can be un-derstood as dimensions encoded by dimensional verbs or adjectives. Therefore, our project can contribute to a theory of decomposition by exploring the dimensional properties of the decompositional roots.

In German, many DDVs involve particle verb formation. Here, we can directly build on the template approach by Stiebels (1996, 1998) which discusses deadjectival and denominal verbs.

For an analysis of secondary dimensional verbs it is important to delineate the environments and uses underlying interpretations of dimensional verbs. Besides the generic and habitual interpretation the middle voice represents such an environment. Kaufmann (2004) has advanced a new approach to the middle voice, which provides a foundation for a partial analysis of stative and dynamic secondary dimensional verbs.

With respect to French, reflexivity plays a crucial role in this context. Although the dimensionality of verbs has not yet been regarded as a relevant factor in the evolution and the current functions of French reflexive constructions, the analyses presented in different synchronic and diachronic studies on reflexivity and diathesis in French (e.g. Muller 2005, 2007, Waltereit 2000, Kriegel 1997, Cortès/Kriegel 1997) can serve as a starting point for our research on the interplay between the evolution of stative as well as non-stative dimensional verb readings and the use of reflexives in French.

On the other hand, the historical investigation on dimensional verbs can profit from traditional semasiological and onomasiological studies focusing on the development of specific verbs or semantic fields in the Romance languages (such as Steengard 1991). For the in-depth analysis of the conceptual, semantic, and formal processes at work in the evolution of dimensional verbs we can draw on contemporary studies on language change and synchronic variation in Romance that integrate different cognitive approaches (e.g. Blank 1997, Waltereit 1998, Koch 2001, 2004).

Synchronic considerations can be developed using material published in the area of *lexique-grammaire* by various members of the LADL (*Laboratoire d'Automatique Documentaire et Linguistique*), now integrated into the Institute Gaspard Monge (IGM). The verb tables will be instrumental in detecting dimensional verb readings and supply valuable information about the corresponding syntactic properties. These tables are – at least in part – available via internet (cf. http://infolingu.univ-mlv.fr; *Données Linguistiques, Lexiques-Grammaire*). Moreover, synchronic studies on different verb classes belonging to DVs might serve as a base (e.g. Schwarze 1993, Ehrig 1991, Schpak-Doldt 1989).

2.2 Preliminary work

The term 'dimensional verb' goes back to an observation in Löbner (1979), who distinguishes between verbs such as *schmecken* 'taste of', which encode only one dimension, and verbs such as *kleben* 'stick to', which refer to two dimensions. Löbner also provides a formal definition of the concept of 'dimension' which is based on the notion of a mathematical function. The study of intensional verbs also includes a compilation of dynamic dimensional verbs in German (which happen to have also intensional uses). Löbner (1990) presents an approach to dimensional adjectives that can be adopted for the analysis of the relation between dimensional verbs and adjectives. Gamerschlag (2002, 2005, 2007) has presented lexical-semantic analyses of complex verbs in Japanese and control verbs in Korean. The decompositional representations proposed in these works can be applied to the analysis of the verb classes under consideration. In addition, the knowledge of the Korean verb system is relevant for the investigation of dynamic dimensional verbs in Korean. Gamerschlag (in prep.) has investigated 13,575 verbal entries in the 2003 CD-ROM edition of the German standard dictionary 'Duden - Deutsches Universalwörterbuch', in order to inventory the SDVs in German. All of the lemmata qualifying as SDV were characterized by a key containing information about the

encoded dimension(s) (e.g., DURATION, TASTE), the availability of an absolute use, the paraphrasability by an adjectival construction, the type of the value specification (scalar vs. non-scalar, predicative vs. non-predicative), the grammatical realization of the value specification (e.g., NP, PP), and the overall valency of the SDV. The result is a small repertoire of primary SDVs, which refer to a confined set of recurring functional concepts such as ORIGIN, LOCATION, DURATION, NAME and TASTE. Moreover, similar dimensions could be bundled as special instances of a more general or 'super' dimension. Gamerschlag & Schwarze (in prep.) have investigated a number of contrasts between German and French SDVs. To account for these contrasts, they propose the processes 'dimensional shift' and 'dimensional reduction', which apply differently in German and French. Gamerschlag & Ortmann (in prep.) have developed a parallel classification of nouns and verbs based on dimensionality as a class-defining property. The research program is designed to proceed with the system of verb classes resulting from their approach. In a series of publications Geisler has focused on different semantic processes that motivate the evolution of grammatical structuring in Romance Languages, especially in French (cf. Geisler 1982, 1988, 1991, 1994). Geisler (1988) highlights the semantic mechanisms that lead to the transformation of prototypical transitive verbs acquiring pseudo-transitive and intransitive readings. He also describes their formal correlates in the history of French. Geisler (1991) deals with significant changes occurring in the domain of copula verbs and subsequent syntactic reorganizations. These studies serve as a basis for the analysis of the processes at work in the historical evolution and synchronic derivation of dimensional verb readings and the emergence of copula (or copula-like) verbs. Schwarze has worked on SDVs in French and on the relation between verbal, adjectival and nominal expressions. A first survey of the expression of (stative) dimensionality in Romance and of some major synchronic contrasts between German and Romance Languages has been presented in Schwarze (in press). Her publication also analyzes how SDV readings are treated in monolingual dictionaries. Since dictionaries are used as a basic means for detecting SDVs, it was necessary to test the reliability of the available information. As a result, in most cases general monolingual dictionaries did not yield sufficient information about SDV readings and their corresponding syntactic properties. Therefore, verb dictionaries (Busse/Dubost 1977) and the verb tables offered in the realm of lexicon-grammar (see above) were used as additional tools for compiling an inventory of French SDVs which subsequently were analysed diachronically. The investigation of SDVs constitutes an important foundation for further research in the field of non-stative dimensional verbs in French. Kiguradze analyzed the Georgian verb system in her master's thesis (2005), in which she also discusses the problematic aspects of verb classification. Numerous aspects of her analysis are closely related to stative dimensional verbs, specifically the interpretation of the aorist forms and the relation of the so-called 'middle' and 'passive' verb classes to analytically formed middles and passives.

3 Goals and work schedule

3.1 Goals

The project explores the linguistic relevance of dimensionality as property of verb meanings and compares the verbal encoding of dimensions to alternative constructions based on dimensional adjectives and functional nouns. We will approach the phenomenon from an empirical perspective by investigating the inventory of DVs in German, French, Georgian, and Korean. Typologically, DVs and the corresponding adjectival and nominal variants show considerable variation. Our comparative approach will help locate regularities in these contrasts and isolate language-specific profiles.

With respect to French and Georgian we will also focus on the historical development of DVs. We will investigate the different semantic and syntactic processes that lead to dimensional verbs and elucidate the historical relation between dimensional verbs and functional nouns (see A4).

Our theoretical hypothesis is that dimensionality plays a crucial role for verb meaning and can be understood as a class-defining property differentiating dimensional from non-dimensional verb classes. Verb classes can be distinguished by a binary feature [±dimensional], which corresponds to the presence or absence of a dimensional attribute in the frame representation of a particular verb. If we also consider the stative/dynamic and intransitive/transitive distinctions captured by the binary features [±dynamic] and [±transitive], 8 verb classes can be differentiated. The exploration of dimensionality encoded by verbs proceeds along these 8 verb classes and is focused on the classes that are [+dimensional]. It addresses regularities within the particular classes as well as transitions between dimensional and non-dimensional classes. Depending on the research accomplished in the previous project phase, the starting point of the investigation differs for each of the four languages under consideration. Consequently, the goals are formulated with respect to the state of knowledge in the particular language. Goals 1 to 3 focus on German, the remaining goals concentrate on French, Georgian, and Korean.

Goal 1. Stative dimensional verbs and their relation to non-dimensional verbs

a. Argument alternation and secondary SDV-formation

Stative dimensional verbs, which are formally characterized by the features [+dimensional, –dynamic], are the simplest instances of dimensional verbs. We distinguish two subtypes of SDVs: verbs such as *dauern* 'last' and *heißen* 'be called' are SDVs because of their lexical meaning, at least in one of their lexicalized meaning variants. They are thus lexical or *primary* SDVs and can be differentiated from *secondary* SDVs which are derived from non-dimensional verbs by way of some productive argument alternation. Examples of secondary SDVs are given in (7) (the dimension is provided in brackets).

(7) a. *Dieses Modell fotografiert sich gut.* (PHOTOGRAPHABILITY)

'This model photographs well.'

← *Man kann dieses Modell gut fotografieren.*

'One can photograph this model well.'

     b.   *Die Musikwissenschaft wird in drei Disziplinen untergliedert.* (SUBDIVISION)

            'Musicology is divided into three disciplines.'

            ← *Man untergliedert die Musikwissenschaft in drei Disziplinen.*

            'One divides musicology into three disciplines.'

     c.   *Der Code öffnet die verschlüsselte Datei.* (FUNCTION)

            'The code opens the encrypted file.'

            ← *Man öffnet die verschlüsselte Datei mit dem Code.*

            'One opens the encrypted file with the code.'

     d.   *Der Artikel dokumentiert die Firmengeschichte.* (TOPIC)

            'The article documents the company's history.'

            ← *Der Journalist dokumentiert die Firmengeschichte in dem Artikel.*

            'The journalist documents the company's history in the article.'

As the examples illustrate, secondary SDVs typically result from an argument alternating process such as reflexivization in (7a), passivization in (7b), and a number of alternations which make a former adjunct PP the subject such as the instrument alternation in (7c) and locative to subject alternation in (7d). All alternations of this type involve a shift in the thematic role of the subject from the 'canonical' agent/experiencer to a role originally carried by a non-subject in the valency frame of the underlying non-dimensional verb.

In our survey of SDVs in German, we collected numerous instances of secondary SDVs which are listed as specific uses in dictionary entries of non-dimensional verbs or occur side by side with primary SDVs in expository texts. However, the alternations which yield secondary SDVs still require a systematic analysis with respect to (a) the possible types of alternation, (b) the argument affected by the alternation, and (c) the verb classes underlying secondary SDV formation.

    With regard to (a), the task will be to compile an exhaustive set of operations which yield secondary SDVs. Here, we have detected the most prominent types but have not yet arrived at a complete picture of possible alternations. Especially PP to subject alternations exhibit a variety of subtypes (e.g., instrument alternation, locative to subject alternation) which require a principled account.

    The effect on argument structure addressed in (b) concerns the semantic role which is affected by the alternation. Whereas reflexivization and passive operate on the direct object, oblique to subject operations affect a participant realized as PP. In this context, the question arises which properties are shared by the participants promoted to subject. A property that deserves attention is the absence of control. Non-control has already been mentioned by Kaufmann (2004) as a central characteristic of the middle voice reading of reflexive sentences as the one in (7a). However, the correlation of non-control and PP to subject alternations is yet to be analyzed.

    The aspect in (c) deals with properties of the verbs which license secondary SDV formation. First, all of the verbs underlying these operations are transitive. Superficially, this appears to be a trivial observation given that reflexivization and passive require the verb to be transitive. However, in view of the fact that there are also PP to subject alternations, the transitivity requirement needs further explanation. Second, more specialized alternations are re-

stricted to specific verb classes. For example, metonymies of the type illustrated in (7d) require the verb to denote some kind of speech act such as *dokumentieren* 'document', *beschreiben* 'describe', and *erzählen* 'tell' in order to license a PP denoting some abstract 'container' of the utterance. Likewise, verbs which allow for the instrument alternation denote some kind of physical or abstract manipulation. Again, this restricts the set of verbs for which the alternation is available. Third, all of the examples given above illustrate the shift from [–dimensional, +dynamic] to [+dimensional, –dynamic], i.e. from dynamic, non-dimensional verbs to stative, dimensional verbs. This is, however, not the only type of transition. As our survey has shown, there is also a set of non-dimensional statives such as *besitzen* 'own', *enthalten* 'contain', and *anführen* 'lead'. Characterized as [–dimensional, –dynamic, +transitive], the verbs in this class are not dimensional, since they denote relations from one to many: a person can possess more than one thing, in a container there can be several different objects, and one can be the leader with respect to several hierarchies. However, many of these relational state verbs are left-deterministic: a thing has one owner (possibly an aggregate of persons), an object can only be located in one container, and a ranking has exactly one leader. Therefore, these verbs can be turned into SDVs via passivization as illustrated below. (Alternatively the definition of SDV could be generalized as to cover these verbs, too.) In this example the passive form of *anführen* 'lead' is dimensional and refers to a dimension LEADER, whose value is specified by the noun *Rangers*, which is the subject in the corresponding active sentence.

(8) a. *Die Rangers führen die schottische Premier League an.*

        'The Rangers lead the Scottish Premier League.'

    b. *Die schottische Premier League wird von den Rangers angeführt.* (LEADER)

        'The Scottish Premier League is led by the Rangers.'

The passive sentence in (8b) differs from the one based on the verb *untergliedern* '(sub)divide' in (7b) by the absence of habituality, which is required to yield the SDV-reading in (7b). Moreover, reflexivization can be applied to *untergliedern* to yield a SDV but it is not applicable to *anführen*:

(9) a. *Die Musikwissenschaft untergliedert sich in drei Diszplinen.*

        'Musicology subdivides into three disciplines.'

    b. **Die schottische Premier League führt sich in/durch die Rangers an.*

        lit.: 'The Scottish Premier League leads with/by the Rangers.'

Non-dimensional state verbs have already been assessed as a possible source for secondary SDVs. The verbs of this class appear side by side with SDVs in considerable frequency in text types of a generalizing descriptive nature, such as scientific texts. Because of their importance they will be subject to further exploration.

b. Criteria for the distinction between primary and secondary SDVs

In order to avoid an inflationary use of the term 'secondary SDV' we have decided to revise the primary/secondary distinction. We now confine ourselves to SDVs which come about by transparent and productive alternations, as is the case with the instances in (7) above. As a consequence, a number of SDVs, which are clearly related metaphorically to dynamic verbs

but do not result from a productive argument alternation, such as *sich verjüngen* 'taper (lit. rejuvenate)', are rendered as primary SDVs, because their SDV meaning is just lexicalized. Instances of so-called 'fictive motion' (Talmy 2000) illustrated in (10) are more difficult to characterize. (10a) can be related metonymically to the dynamic variant *Jemand geht auf der Straße in ein Seitental.* 'Someone is going on the road into the side valley', in which the subject of the SDV variant is realized as a local PP. However, the subjects in (10b) and (c) cannot be associated with a PP of a dynamic variant although the stative use of the verbs clearly derives metaphorically from the corresponding dynamic verbs.

(10) a.   *Die Straße geht in ein Seitental.* (COURSE)

           'The road goes into a side valley.'

      b.   *Die Narbe geht vom Ohr bis zum Kinn.* (COURSE)

           'The scar goes from the ear to the chin.'

      c.   *Die Felsen stürzen steil ins Meer.* (GRADIENT)

           'The rocks fall steeply into the sea.'

With regard to the criterion for the primary/secondary distinction mentioned above, *gehen* 'go' in (10a) results as a secondary SDV whereas *gehen* in (10b) and *stürzen* 'fall' in (10c) are rendered as primary SDVs. However, intuitively the examples in (10) should be treated on a par as either instances of primary or secondary SDVs. As a consequence, the criteria for the distinction between primary and secondary SDVs call for refinement. This requires a closer look at SDVs that are derived via some metaphoric/metonymic shift. Shifts of this type are not confined to 'fictive motion' or the alternations given in (7c,d) above. They also include stativized, figurative uses of verbs such as *sehen* 'see, look' and *machen* 'make' illustrated below.

(11) a.   *Die Fenster sehen auf den Park.* (DIRECTION)

           'The windows look out on the park.'

      b.   *Durch die Fenster sieht man auf den Park.*

           'Through the windows one looks out on the park.'

(12)   *Der Wagen macht 160 km/h.* (CAPACITY)

           'The car makes 96 mph.'

The SDV-use of *sehen* in (11a) can be derived from the non-SDV variant in (11b) via some PP to subject alternation. Consequently, it can be considered as a secondary SDV. However, *machen* in (12) is rendered as a primary SDV since its meaning is clearly lexicalized and cannot be considered as resulting from an argument structure alternation. Despite their different classification, both of the SDVs in (11) and (12) involve some figurative shift. The variety of metonymic/metaphorical processes indicated by the examples above needs further investigation, which is envisaged for the first stage of the next project phase.

c. De-dimensionalization of SDVs

Closely related to the derivation of SDVs from non-dimensional verbs are processes which operate in the opposite direction and result in the loss of dimensional meaning. For example,

in German, a number of copula-like verbs that figure in the so-called Funktionsverbgefüge derive from SDVs, such as *liegen* 'lie' and *stehen* 'stand':

(13) a. *Die Akten liegen unter Verschluss.*

'The files are kept (lit.: lie) under lock and key.'

b. *Der Verdächtige steht unter Beobachtung.*

'The suspect is (lit.: stands) under surveillance.'

The copula-like use of *liegen* und *stehen* in the examples above can be described as the result of the loss of the dimensions LOCATION and POSTURE. Such a 'de-dimensionalization' can be captured as a transition from [+dimensional, –dynamic, –transitive] to [–dimensional, –dynamic, –transitive]. Here, the task will be to determine which classes of SDVs evidence such a transition into copula-like verbs. At first site, this process seems to be confined to bidimensional SDVs involving the dimensions LOCATION and POSTURE, although further investigation is indicated here. Moreover, the loss of dimensional information with respect to verbs, such as *liegen* and *stehen*, is a gradual process with characteristic stages. For example, the use of *liegen* in the sentence below seems to constitute some intermediate stage between the copula-use in (13a) and the 'full' SDV-use of *liegen*, given that locational information is still present while information about posture is already absent.

(14) *Nantes liegt in Frankreich.*

'Nantes is situated in France.'

As part of our investigation we plan to discover the path the gradual loss of dimensional properties takes.

Goal 2. Survey and subclassification of dynamic dimensional verbs in German

After an analysis of stative DVs, the next step is to look at dynamic DVs (DDVs), which are characterized as [+dimensional, +dynamic, ±transitive]. DDVs will be collected from dictionaries and texts in order to collate an exhaustive inventory of these verbs. A first collection of such verbs was compiled by Löbner (1979). The method chosen here has already proven fruitful for the analysis of SDVs, since certain trends, such as the confinement to a small set of encoded dimensions and the historical development from dynamic verbs, become obvious only after a larger number of verbs is taken into consideration. The verbs will be characterized with respect to the encoded dimension, the interpretation and grammatical realization of the value specification, the morphological derivation, and argument structure (intransitive or transitive) as indicated below.

a. Dimension

DDVs can refer to a change along a variety of dimensions. Examples of different dimensions expressed by DDVs are given in (15).

(15) a. *Der Mikroprozessor ist auf Briefmarkengröße geschrumpft.* (SIZE)

'The microprocessor has shrinked to the size of a stamp.'

b. *Das Rohr hatte sich zu einem S verformt.* (FORM)

'The pipe had formed into an 'S'.'

  c.   *Die Flüssigkeit war zu einem Eisblock gefroren*. (AGGREGATE STATE)

       'The liquid had frozen into a block of ice.'

  d.   *Er setzte sich aufs Sofa*. (LOCATION; POSTURE)

       'He sat down onto the sofa.'

b. Types of value specification

Like SDVs DDVs allow for the realization of a dimension-specific property which represents a specification of the value the object takes in this dimension ('value specification'). In contrast to SDVs, this property is presented as the result of a change along the particular dimension. This is illustrated by the examples in (16). *Wachsen* 'grow' and *abkühlen* 'cool (down)' imply the dimensions LENGTH and TEMPERATURE respectively; the constructions also specify the values *2 Meter* '2 meters' and *8 Grad Celsius* '8 degrees Celsius', respectively.

  (16) a.   *Der Baum ist (um) 2 Meter gewachsen.*

            'The tree has grown 2 meters.'

       b.   *Die Milch ist auf 8 Grad Celsius abgekühlt.*

            'The milk has cooled to 8 degrees Celsius.'

Both of the value specifications are interpreted as the result of a change with respect to length and temperature. Yet, they differ as far as their interpretation is concerned: in (16a) *um 2 Meter* '2 meters' is not the absolute length of the tree but the difference between some unspecified former length and the length at the time of the utterance. By contrast, *8 Grad Celsius* '8 degrees Celsius' in (16b) is the absolute value of the temperature at the time referred to by the present tense. The difference in value interpretation is indicated by the particular preposition. Thus, the measure phrase in (16a) would be interpreted as the absolute length of the tree if used within an *auf*-PP, whereas the substitution of *auf* by *um* in (16b) indicates a temperature difference. A further contrast between (16a) and (b) concerns the direction of change. While the difference of 2 meters in (16a) results from an increase of length, the value of 8 degrees Celsius follows from a decrease in temperature. Compared to SDVs, DDVs obviously involve more parameters of variation that have to be explored in the survey planned.

c. Absolute use and inherent value specification

In contrast to SDVs the absolute use of DDVs (= use without value specification) is generally available, as shown by the examples in (17).

  (17) a.   *Der Baum ist gewachsen.*

            'The tree has grown.'

       b.   *Die Milch ist abgekühlt.*

            'The milk has cooled (down).'

The reason seems to be that the direction of change encoded by the verb already entails an indirect value specification in so far as the degree of length or temperature at the time of utterance is above or below the degree at some unspecified former point of time. There are other DDVs that can only be used absolutely. Verbs, such as *schmelzen* 'melt'or *ergrauen* 'turn gray' denote the change from solid to liquid and from non-gray to gray, respectively. *Schmelzen* and *ergrauen* differ from *wachsen* and *abkühlen* by incorporating the resultant state of the

change (liquid and gray). Therefore, they are not compatible with an external value specification. In analogy to SDVs we may call these verbs DDVs with *inherent value specification*.

(18) a. *Der Schnee schmolz.*

'The snow melted.'

b. *Sein Haar ist ergraut.*

'His hair has grayed.'

DDVs of this subtype only admit a further specification of the value inherent to the verb as in (19a), where *silbern* 'silvery' specifies *grau* 'gray'. Interestingly, in (19b) *zu schmutzigen Pfützen* 'into dirty puddles' specifies a value within the dimension FORM, while the verb encodes a shift with respect to the dimension of AGGREGATE STATE.

(19) a. *Sein Haar war silbern ergraut.*

'His hair had grayed into silvery.'

b. *Der Schnee schmolz zu schmutzigen Pfützen.*

'The snow melted into dirty puddles.'

d. Bidimensional DDVs

Like SDVs, DDVs can encode two dimensions as illustrated by the manner of motion verbs in (20). *Kriechen* 'crawl' and *rollen* 'roll' refer to a change with respect to the dimension of LOCATION and in addition specify a value along the dimension MANNER OF MOTION.

(20) a. *Eine Schnecke kroch den Baum hoch.*

'A snail crawled up the tree.'

b. *Der Hund rannte in den Garten.*

'The dog ran into the garden.'

Verbs of this type are treated in detail by Talmy (1985) and others. However, to our knowledge the dimensional aspects of these verbs have not been treated yet.

e. Morphological derivation of DDVs

Besides a small number of born DDVs, such as *wachsen* 'grow', the majority of DDVs derive morphologically from adjectives and nouns. In addition, the formation of DDVs characteristically involves a preverb (particle or prefix) as illustrated by the examples below.

(21) a. *Der Himmel verfärbte sich rot.*

'The sky changed color to red.'

b. *Der Wald ist ergrünt.*

'The wood turned green.'

f. Intransitive versus transitive DDVs

Depending on their argument structure DDVs can be divided into two classes: intransitive DDVs such as *wachsen* 'grow' and *ergrauen* 'gray' predicate a dimension-specific change of state of the subject referent, whereas transitive DDVs, such as *verbreitern* 'widen' and *schwärzen* 'blacken', specify a change with respect to the object referent. Transitive DDVs are causative, i.e., the change is brought about by the subject referent. In our system, the two

classes of DDVs are characterized by [+dimensional, +dynamic, –transitive] versus [+dimensional, +dynamic, +transitive]

In German, the majority of intransitive DDVs are middles obtained via reflexivization from transitive DDVs, as in *sich verbreitern* 'widen (intr.)' and *sich verformen* 'deform (intr.)', which are derived from the transitive DDVs *verbreitern* and *verformen*. Since many intransitive DDVs are derived from transitive DDVs, it is not realistic to investigate intransitive and transitive DDVs separately. The survey, therefore, is directed at both subclasses of DDVs.

Goal 3. Analysis of dynamic dimensional verbs in German

a. Regularities in the formation of DDVs

As mentioned above, many transitive DDVs are derived from an adjectival or nominal base. The intransitive DDV results from the reflexivization of the transitive DDV, although this does not always need to be the case. First, transitive DDVs such as *setzen* 'set' and *legen* 'lay' relate diachronically to the SDVs *sitzen* 'sit' and *liegen* 'lie' respectively. Second, particle verb formation can also result directly into intransitive DDVs, as in the case of *erblinden* 'go blind' and *erkalten* 'get cold'. Third, SDVs which refer to sound or light emission productively combine with the prefix *er-* to form intransitive DDVs, such as *erschimmern* 'start shimmering', *erglühen* 'start glowing' and *erdröhnen* 'start roaring'.

Here, the task will be to analyze each DDV with respect to its origin, in order to isolate different paths of DDV-formation and relate them to the lexical category and the dimension the base belongs to. When a DDV is formed with a preverb it is necessary to verify whether there are regularities between the particular particle and the resulting DDV. For example, *be-*affixation only results in transitive (causative) DDVs (*beruhigen* 'calm s.o.', *beengen* 'cramp') whereas *er-*affixation derives intransitive as well as transitive DDVs (*erblinden* 'go blind' vs. *erheitern* 'cheer up').

Another phenomenon that requires further research is the fact that many SDVs represent some kind of derivational endpoint. For example, there is no intransitive or transitive DDV morphologically related to *kosten* 'cost' which means 'to change one's price' or 'to change the price of something'. Instead, the deadjectival *verteuern* 'make more expensive' and *ver-billigen* 'make cheaper' and their reflexive variants are employed, which in comparison to *kosten* also specify the direction of the change.

b. Dimensions encoded by DDVs

A further step in the analysis of DDVs will be to detect generalizations about the encoded dimensions. The investigation of SDVs has shown that primary SDVs and to some degree secondary SDVs derived by a metaphoric or metonymic process refer to a confined set of basic dimensions, such as LOCATION, COURSE, DURATION or PRICE. It has to be investigated if the dimensions found can be reduced to a small set of recurring dimensions for DDVs as well. We will also try to assess whether specific derivational patterns such as *er-*prefixation are restricted to particular dimensions, as may be the case with DDVs of light or sound emission.Stiebels (1996) has observed that purely inchoative verbs, such as *welken* 'wilt' and *ver-dunsten* 'evaporate', can only refer to natural processes that cannot be caused or manipulated externally. The change denoted by these verbs is subject to what Levin & Rappaport Hovav (1995) call 'internal causation'. Here, we have to find out if a change caused by internal cau-

sation proceeds along a confined set of dimensions such as AGGREGATE STATE, TEMPERATURE, and DEVELOPMENTAL STATE. By contrast, intransitive DDVs derived by reflexivization are expected to encode a greater variety of dimensions since they involve external causation.

c. Absolute use

In contrast to SDVs the absolute use of DDVs seems to be some kind of default use or at least as easily available as the use with an explicit value specification. We will have to clarify how this asymmetry between DDVs and SDVs is motivated. The absolute use of a DV is always tied to the deducibility of the value, which, at first sight, seems to be attributable to the property of dynamicity in combination with certain prefixes. For example, the particle *ab* in combination with the base verb *schwellen* 'swell' entails that the degree of a swelling has decreased and not increased, which would in turn be expressed by the particle *an*.

d. Formal representation of DDVs

SDVs can easily be integrated into a frame-theoretical representation of verbs as simple attribute-value-pairs: the dimension translates directly into an attribute with the value specification as its value. The situation is more complicated for DDVs, for which there must be some means of representing change of state and causation that are characteristic meaning components of DDVs. Here, we can benefit from the collaboration with project A6, in which general frame representations for semantic verb classes resulting from decompositions into primitives such as CAUSE and BECOME will be developed. The semantic templates for deadjectival and denominal verbs that Stiebels (1996) proposes serve as a starting point for our formal representation and can be expanded accordingly.

Goal 4. Synchronic and diachronic aspects of dimensional verbs in French

a. Diachronic aspects of DV-formation

Investigation into the history of stative DVs in the previous project phase demonstrates that the majority of these verbs are transparent. They can either be traced back to adjectives (OFr. *dur* 'hard' → OFr. *durer* 'last'), to nouns (Lt. *finis* 'end' → Lt. *finire* → OFr. *finir* 'end'), or to a special group of event verbs (Lt. *pendere* 'hang (up)' → OFr. *peser* 'weigh').

In close collaboration with project A4, which is concerned with the evolution of deverbal functional nouns, we try to delineate the development of DVs, which evolve from verbs encoding sensory-motor concepts as in examples (22a-d). Many DVs in this group directly stem from roots denoting main body postures or elementary hand actions:

(22) a. Lt. *stare* 'stand' → Lt. *constare* 'stand still (of a balance)' → Fr. *coûter* 'cost' (e.g. *Le pain coûte deux euros* 'The bread costs two euros')

  b. Lt. *ponere* 'lay down' → Lt. *componere* 'put together' → Fr. *être composé/se composer de* 'be composed of' (e.g. *Le groupe se compose/est composé de garçons et de filles* 'The group is composed of boys and girls')

  c. Lt. *dare* 'give' → MLt. *donare* → Fr. *donner sur* 'go out to' (e.g. *La pièce donne sur la mer* 'The room goes out to the sea')

  d. Lt. *portare* 'carry, bring' → Fr. *porter sur* 'treat, pertain to' (e.g. *Cette étude porte sur le chômage* 'This paper treats unemployment')

Further investigation on stative as well as dynamic DVs will help to substantiate the correlation between a sensory-motor conceptual foundation and specific dimensional ranges.

The development of DVs is propelled by associative processes such as metonymy and metaphor. These processes rely on gestalt principles of perception (figure and ground, similarity, proximity or contiguity, etc.) and can be specified for every step in concept development. In initial stages, metonymic profiling strategies in verbally encoded event frames appear to dominate, whereas subsequently, metaphors enable domain mapping of functional concepts (see A4). For example, starting with a transitive Lt. verb such as *ducere* 'drag', the semantic changes motivated by metonymies consist in a gradient loss of agentivity through shifting the agent out of its canonical subject role and through profiling non-canonical roles, such as Instrument, Location, Source, Path and Goal, into subject position. The ensuing alternations in argument and thematic structure are particularly relevant to scientific discourse in general and all kinds of expository texts which try to impart depersonalized, objective knowledge.

(23) a.   Lt. *alqd ducere* 'drag sth'
           → Lt. *alqm mecum duco* 'I drag sb with me'
           —^{meton}→ VLt. *alqm conducere* 'lead sb'

      b.   Fr. *conduire qn* (*par la main*) (*sur un chemin*) (*à l'ecole*) 'lead sb (by the hand) (on a way) (to school)' (see kinesthetic verb frame: *conduire* [Ag, Exp, Instr, Goal, Path])

      c.   —^{meton}→ *le chemin* (*nous*) *conduit à l'école* 'the way leads (us) to school': ['(the way) gone' → 'goer'] resp. [Path → Ag]

      d.   —^{metaph}→ *cette politique conduit à l'échec* 'this strategy leads to desaster': [Path = Method]

In transitory stage (23c), the non-canonical role of Path becomes subject through metonymic profiling. Most instructive is the fact that the stage (23d) is attainable through ambiguous readings such as *this way leads to a goal*, where the noun *way* may be interpreted as 'way' or 'method' depending on context.

As is the case with transitive verbs denoting actions, unaccusative and unergative verbs denoting elementary movements, such as *go*, *run*, *fall*, transform in a similar way. In the course of their development to DVs, less prominent roles in the original verbal event frame become salient and finally the DV encodes a single attribute denoting a single dimension. Starting from a complex event verb, the associative processes even allow to single out different attributes denoting different dimensions as demonstrated in example (24).

(24) a.   Lt. *scandere* 'jump up' → 'climb'

      b.   Lt. *descendere* 'go down (from a high point to a low point)'

      c.   OFr. *descendre du toit à/dans/jusqu'à la cave par l'escalier* 'go down from the roof into the cave on the stairs' (high point, low point, instrument)

      d.   Fr. *L'homme descend du singe* 'Man descends from ape' (high point → origin)

      e.   Fr. *Le puits descend à quarante mètres* 'The well goes down to 40 metres' → 'The well is 40 metres deep' (low point → [measure of] depth)

      f.   Fr. *La route descend fort* 'The street drops steeply' (manner → [measure of] gradient)

In this project phase, we try to encompass the complex semantic shadings and filiations which lead to DV-readings in French verbs and, by doing so, to further explicate recurrent associative processes. As was indicated above, we will not only extend our inventory of stative DVs but also take into consideration the development of the supposedly rather small group of deverbal dynamic DVs, e.g. *pousser* 'grow' (< Lt. *pulsare* 'beat'/'push'), *fondre* 'melt' (< Lt. *fundare* 'pour (out)'), *enfler* 'swell' (< Lt. *inflare* 'blow up'), *élever* 'heighten' (< Lt. *elevare* < *levare* 'pick up'/'lift up').

A2

Another important group of French DVs to be regarded is derived from descriptive adjectives which encode dimensional attributes of their subject referent (see Fr. *grandir* 'grow', *rougir* 'turn red', *rajeunir* 'rejuvenate', *allonger/s'allonger* 'lengthen' etc.). Deadjectival derivations make it possible to reintegrate these dimensions into time-dependent events (Fr. *il est grand* 'he is big' vs. *il grandit* 'he grows big') and are thus characteristic of dynamic DVs. However, this type of DV-formation is less productive in French than it is in German. Since French proves less flexible in the use of preverbs, additional aspectual functions have to be encoded by means of auxiliary verbs in many instances (cf. Fr. *tomber malade* vs. Ge. *erkranken* 'get sick/fall sick', Fr. *devenir sauvage* vs. Ge. *verwildern* 'get wild/run wild').

Denominal DVs, such as Fr. *finir* 'end', *aboutir à* 'lead to an endpoint', *déboucher sur* 'lead to an end' or (*se*) *déformer* 'deform'/'go out of shape' are derived from functional nouns (see Fr. *fin* 'end', *bout* 'limit'/'endpoint', *bouche* 'mouth', *form* 'shape'). As is the case with deadjectival DVs this type makes the functional noun available for dynamic processes; subsequently these denominal derivations may as well acquire stative dimensional readings.

Interestingly, there are rare groups of DVs based on sortal nouns, such as those denoting light and sound emission; cf. Fr. *chatoyer* 'shimmer' (from *chat* 'cat', due to the effect of cat's eyes), *étinceler* 'sparkle' (< *étincelle* 'spark'), *flamboyer* 'blaze' (< OFr. *flambe* 'flame, blaze'), *sonner* 'sound' (< *son* 'sound'). This evolutionary pattern may be restricted to specific dimensions such as optical and acoustic appearance (see Goal 3 above for the possible correlation between dimension and preverb formation in German).

The task in the follow-up project will be to arrive at a systematic description of the derivational means by which different sorts of stative as well as dynamic DVs are produced.

b. Contrasting French and German DV-formation

Research in the previous project phase has shown that French and German display various considerable contrasts. They diverge according to the inventory of SDVs in certain semantic groups, the number of complex SDVs as well as to the range of use of specific SDVs. Dimension specific contrasts have for example been found for sensual, perception-based SDVs and for posture verbs (see project report). In general, our crosslinguistic analysis on SDVs leads us to suppose that beyond the group of posture verbs (such as *être debout* 'stand', *être assis* 'sit', *être couché* 'lie') there will be more systematic differences in encoding SDVs as resulting states (cf. *être collé* 'to be stuck' and *être composé de* 'to be composed of'). Another means to yield secondary SDVs which calls for further contrastive investigation is the reflexive construction with purely argument reducing function, which in French seems to be more easily available than in German (cf. *s'appeler* 'be called', *se chiffrer à* 'amount to', *s'utiliser* 'be used', etc.). At the same time, reflexivization plays an important role in DDV formation, since it serves as a regular device for the intransitivization of causative DVs (cf. Fr. *agrandir*

vs. *s'agrandir* 'grow', *approfondir* vs. *s'approfondir* 'deepen', *élargir* vs. *s'élargir* 'widen'etc.).

In the field of DDVs, we are mainly concerned with the different productivity of deadjectival and denominal derivation (see 4a above). In French and German, derivational means seem to alternate with auxiliary formation in a non-regular way (cf. Fr. *devenir petit* vs. *rapetisser* 'get smaller', Ge. *heiß machen* vs. *erhitzen* 'heat (up)'). For some instances, this alternation might have a purely stylistic motivation (depending on registers), but in other cases, we assume that different formal means are related to specific dimensions or to their values.

Goal 5. Dynamic dimensional verbs in Korean

Of the four languages under consideration, Korean is the sole instance of a language lacking SDVs. Moreover, dimensional adjectives in the positive reading such as *nelpta* 'wide' do not allow for the realization of value specifications of the sort indicated in (25a). To compensate for this lack, Korean employs constructions based on functional nouns as in (25b).

(25) a. *Kil-i   (*8m)   nelp-ta.*
          road-NOM   8m   wide-DECL
          'The road is (*8 meters) wide.'

      b. *Kil-nelpi-ka   8m-ta.*
          road-width-NOM   8m-DECL
          lit. 'The road-width is 8 meters.'

However, when *nelpta* 'wide' is transformed into an intransitive or transitive DDV by means of suffixation, it can be combined with a measure phrase. If realized with the goal postposition *lo*, the measure phrase has a reading that may be characterized as absolute. If realized without the postposition, by contrast, it expresses a difference with respect to the dimension indicated by the verb. Examples are provided below.

(26) a. *Kil-i   8m(-lo)   nelpe-ci-ess-ta.*
          road-NOM   8 meters(-to)   wide-BECOME-PAST-DECL
          'The road widened (to) 8 meters.'

      b. *Inpwu-ka   kil-ul   8m(-lo)   nelp-hi-ess-ta.*
          worker-NOM   road-ACC   8 meters(-to)   wide-CAUS-PAST-DECL
          'The workers widened the road (to) 8 meters.'

As a language exhibiting a clear asymmetry between SDVs/dimensional adjectives and DDVs, Korean requires further exploration. It also constitutes an instance of what Haspelmath (1993) designates as the *non-directed type* of inchoative/causative verb pairs, since neither the inchoative verb (= intransitive DDV) nor the causative (= transitive DDV) is derived from one another. Rather, both the intransitive and the transitive DDV are formed by attaching different suffixes to the stem of the adjective. It would be beneficial to compare the non-directed type of Korean to a language such as German, in which the inchoative is typically derived by reflexivization from the causative.

Goal 6. Stative and dynamic dimensional verbs in Georgian

Georgian SDVs pose an interesting contrast to those in German and French. Some of the primary SDVs in Georgian are not derived from transitive dynamic counterparts as in Indo-

European languages. Therefore, one can find more genuine SDVs in Georgian. Historical investigations of Georgian SDVs also benefit from the fact that there are written sources in Georgian dating back to the fifth century.

Another interesting aspect is that genuine or primary SDVs in Georgian belong to morpho-syntactically different verb classes. There are four verb classes: class 1 are active transitives; class 2 'passives'; class 3 middle and class 4 inversion verbs and so called 'statives'. They differ from each other with regard to their argument structure and in building 'screeves' (aspect-mood-tense paradigms) with different morphemes.

a. Primary SDVs

The main source for primary SDVs in Georgian are so called 'stative verbs' (class 4), which are morphologically marked as statives e.g. *agia* 'lie' and middle verbs of class 3 such as *γirs* 'cost'.

b. Secondary SDVs

Secondary SDVs can be derived from verb roots by means of 'passivization'. This is why so called *i-passives* (with one argument) and *e-passives* (with two arguments) are appropriate: *i-q'ideba* 'it sells', *e-q'ideba* 'it sells him' (marking a beneficiary with the prefix *e-*; e.g. 'his products sell well'). Such forms refer to a certain property; in the given example this is the property or ability of selling. However, such formations are not productive for all verbs. Besides 'passivized' forms, some middle verb forms (class 3) can also function as secondary SDVs, as indicated in the following example.

(27) *am*   *adgilas*   *kuča*   *marcxniv* *uxvevs.*
      this.DAT   place.DAT road.NOM left   turn.MIDDLE
      'At this point the road turns to the left.'

c. Perception verbs

In comparison with German, the use of perception-based SDVs in Georgian is very restricted. There are no equivalent verbs for *schmecken/taste* and *riechen/smell*. Verbs like *ismineba* 'sound' and *igrʒnoba* 'feel' are bound to certain contexts and *gamoiq'ureba* 'look (like)' can only be combined with a restricted range of adjectives; the verb *čans* 'appear'/'seem' fills the gap for all other instances.

d. Explicit value specification with adjectives

In Georgian it is not possible to combine a dimensional adjective with a measure phrase, such as in German *8 Meter hoch*. Rather the value of a dimension must be expressed by means of a nominal construction as in (28)

(28) *saxli*   *ati*   *metris*   *simaγlisaa.*
      house.NOM ten   metre.GEN height.GEN.AUX
      'The house has a height of ten metres.'

e. Absolute use

While there is no absolute use of SDVs in Georgian, unlike the German *Die Suppe schmeckt* 'The soup tastes (well)'; an absolute reading in paraphrases with functional nouns is possible:

(29) *c'vnians   gemo   akvs.*

soup.DAT   taste.NOM   have.3SG

'The soup has a (good) taste.'

f. Bidimensional SDVs

Most German bidimensional SDVs do not have counterparts in Georgian. Instead, constructions with past participle and auxiliary as illustrated by the next example are common.

(30) *dac'ebebulia.*

stick.participle.to be3SG

'It is stuck.'

On the other hand, if we interpret the verb *kleben* 'stick' as a property of the chewing gum, we can adopt the *e-passive* form (as a derivational mechanism for secondary SDVs with a possibilitive meaning):

(31) *saɣeči rezini   magidas   k'argad ec'ebeba.*

Chewinggum.NOM   table.DAT   well   stick.3SG

'A chewing gum sticks well/firmly at the table.'

g. Dynamic Dimensional Verbs

Following the analysis of SDVs the next step will take dynamic dimensional verbs into consideration. In Georgian, as opposed to German, a reverse direction with respect to SDVs can be observed. Whereas many German intransitive DDVs are derived via reflexivization from transitive (causative) DDVs, Georgian causatives generally do not function as an origin for intransitive verbs, as they themselves are derived by means of causative morphemes from non-causative forms. Georgian evidences a morpho-semantically interesting picture, as far as this group of verbs is concerned. The common forms for DDVs are class 2 verbs with four subclasses: *i-passive, e-passive, d-passive, unmarked passive*. Semantically, DDVs indicate a certain change of state. In contrast to German and French, Georgian distinguishes between punctual and non-punctual changes of state. On the morphological level achievements (punctual change of state verbs) are marked differently from accomplishments (non-punctual change of state verbs): *d-* is the marker of punctuality/achievement verbs, while denominal and deadjectival verbs (indicative of one large group of DDVs) are treated as achievements. Non-punctual changes (accomplishments) are marked by circumflexes *i-/e- ... -eb* or only by the suffix *-eb*.

Observations on DDVs can help establish clarity within class 2 verbs, which are treated as passive verbs in traditional Georgian grammars, although in most cases they do not exhibit real passive meanings.

3.2 Methods and work schedule

Time Schedule for German and Korean (goal 1-3 and 5)

2008/2: Analysis of Secondary SDVs (goal 1)

2009/1: Analysis of Secondary SDVs (goal 1 continued),

2009/2: Survey of DDVs in German (goal 2),

2010/1: Survey of DDVs in German (goal 2 continued),

2010/2: Analysis of DDVs in German (goal 3),
          DDVs in Korean (goal 5)

2011/1: Analysis of DDVs in German (goal 3 continued),
          DDVs in Korean (goal 5 continued)

Time Schedule for French (goal 4)

2008/2: Synchronic survey and subclassification of DVs in French
          (according to dimension, stativity/dynamicity, derivation etc.)

2009/1: Synchronic survey and subclassification of DVs in French

2009/2: Diachronic survey of selected groups of DVs by means of etymological dictionaries

2010/1: In-depth diachronic analysis of certain groups of DVs by means of text corpora
          Typology of semantic and grammatical developments

2010/2: In-depth diachronic analysis of certain groups of DVs by means of text corpora
          Typology of semantic and grammatical developments

2011/1: Contrastive analysis of French and German DVs

Time Schedule for Georgian (goal 6)

2008/2: Synchronic analysis of primary and secondary SDVs in Georgian.

2009/1: Diachronic analysis of primary and secondary SDVs.

2009/2: Comparison of SDV constructions with dimensional adjectives and functional
          concepts.

2010/1: Survey of DDVs in Georgian.

2010/2: Subclassification and synchronic analysis of DDVs.

2011/1: Diachronic analysis of DDVs.

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3.3 Experiments involving humans or human materials

☐ **yes** ☒ **no**

3.4 Experiments with animals

☐ **yes** ☒ **no**

3.5 Experiments with recombinant DNA

☐ **yes** ☒ **no**