Hybrid text constituent structures of dictionary articles. A contribution to the expansion of the theory of textual dictionary structures

Abstract
Firstly it is indicated with which different methods of segmentation the article internal text segments of different types can be ascertained. The following types of text segments are distinguished: items, item texts, non-typographical microstructural indicators, functional item additions, item segments, item form segments. Only text segments with text constituent status belong to the first three mentioned types of text segments. They exhibit an own form, at least one separate function and an own position with neighbours for that position. Only text segments without text constituent status belong to the last three above-mentioned types of text segments. Non-hybrid textual structures display element-homogeneous structure-carrying sets, containing only text segments with text constituent status. To the contrary, hybrid textual structures display element-heterogeneous structure-carrying sets. This allows in a formal way, among other, in the formation of structures also the explicit consideration of the upward and downward expanding as well as the internal expanding functional item additions. Consequently they can have their own structural place in the textual structures presented by means of tree diagrams. Previously this has not been possible. Many types of hybrid textual structures are distinguished and formally presented by means of tree diagrams. Finally a comprehensive typological excerpt of hybrid text constituent structures are presented.

1. Preliminary remark regarding the connection of terminology, method and theory
German *Hybride* originates from the Latin *hybrida* 'half-cast'. The accompanying German adjective *hybrid* shows a spectrum of meaning that can be paraphrased as follows according to Duden-GFWB: "mixed, from two origins, composed of several; formed by cross-breeding, mixture". To the theory of lexicographic texts which I have developed, belongs a detailed heuristics (compare e.g. Wiegand 1990: 20-26; 2005 [2006]: 217-226), which also provides different methods for the segmentation of condensed lexicographic texts. For the application of these methods of segmentation, application conventions and conditions of correctness have been fixed. For the linking of methods and parts of theory demanded by the philosophy of science the following principle applies along with others: Only those text elements are considered as elements for concrete textual dictionary structures that are obtained through the proper application of one of the methods of segmentation. The following distinctions apply:

(i) Through an application of the method of exhaustive functional-positional segmentation, that presents one of the variants of the method of functional-positional segmentation, all types of text constituents can be obtained. These are only those functional text segments that display a discrete continuous form of the text segment, at least one genuine function of a text segment and exactly one fixed textual position in the linguistic chain of the text. These are the following: items, item texts and non-typographical structural indicators (cf. Wiegand 2008b, Fig. 4-1).

(ii) Through an application of the method of non-functional-positional segmentation all non-functional text segments as well as all internally expanded functional item additions are obtainable (cf. Wiegand 2007: 201 ff.).

(iii) Through an application of the method of functional segmentative isolation all top and bottom expanded functional item additions, including those without their own position in the linguistic chain, are obtainable (cf. Wiegand 2007, 193 ff).

The following arrangements also apply:
(a) Concrete hierarchical text constituent structures of which the structure-carrying sets are element-homogeneous in the sense that they display as elements only text segments with text constituent status (cf. (i)) are called concrete pure (or: non-hybrid) text constituent structures: All their elements have the same origin in the sense that they are obtainable through the application of the same method. Accordingly abstract hierarchical constituent structures of which the structure-carrying sets only present classes of text segments with text constituent status are called abstract pure (or: non-hybrid) text constituent structures.

(b) Concrete hierarchical text constituent structures of which the structure-carrying sets are element-heterogeneous in the sense that they display as elements both text segments with and also those without text constituent status (cf. (i) to (iii)), are called concrete hybrid text constituent structures: Their elements differ in origin (cf. the translation of the paraphrasing in Duden.⁴GFWB), in the sense that they are obtainable through applications of different methods. Accordingly abstract hierarchical text constituent structures of which the structure-carrying sets display both classes of text segments with text constituent status and classes of text segments without text constituent status are called abstract hybrid text constituent structures.

From this the following can be determined: The composition of the structure-carrying sets is a criterion to distinguish between concrete hierarchical pure and concrete hierarchical hybrid text constituent structures: Concrete hierarchical pure text constituent structures display element-homogeneous structure-carrying sets whereas concrete hierarchical hybrid text constituent structures display element-heterogeneous structure-carrying sets. This relation applies mutatis mutandis to the abstract structures. In addition: Hierarchical textual structures that are not text constituent structures, e.g. certain item structures, can also be divided with the help of the same criteria into pure and hybrid structures (cf. 3).
2. Pure article internal text constituent structures

In condensed dictionary articles (cf. Wiegand 2003 [2004]: 203 ff) text constituent structures occur that belong to three types: the pure article constituent structure, the pure article microstructure and the article internal search area structure (cf. Wiegand 2000: 269 ff). To understand at least on an intermediate level of abstraction why the introduction of hybrid text constituent structures presents an "expansion of the theory of textual dictionary structures" (cf. the subtitle), the following paragraph firstly discusses an example of pure article microstructures in a slightly simplified way. The basis of the theory cannot be dealt with here (cf. Wiegand 1989a and 1989b).

Compare the completely condensed dictionary articles da₁ - da₆ in Fig. 2-1:

da₁: Schürze, der; -es, -e bez. von Handwerkern bei der Arbeit um die Hüften gebundenes, eine Schürze ähnliches Kleidungsstück aus festerem Material: ein ledererner S.

da₂: Spezialist, der; -en, -en jmd., der über besondere Kenntnisse, Fähigkeiten auf einem Fachgebiet verfügt, Fachmann; er ist S. für Holzbearbeitung; er muß einen Spezialisten (Facharzt) aufsuchen.

da₃: Gerichtsvollzieher, der; -s, -es Angehöriger der Justizbehörde, der mit der Durchführung von Zwangsvollstreckungen betraut ist; der G. hat die Möbel gegriffen; die Schulden müssen das einteiligen.

da₄: Stürmung, m., -(e), -e: Stürmungen, stürmisch stürmiger sich auf dem Boden entstehender Staubwind.

da₅: die Baumwolle {nincs többes száma} Mein Hemd ist aus reing Baumwolle. Az ingem tiszta pamut.

da₆:
In the following discussion we firstly look at the concrete hierarchical article microstructure of da₁. No non-typographical microstructural indicators belong to the structure-carrying set of a concrete hierarchical article microstructure. They rather belong to the structure-carrying sets of concrete hierarchical article constituent structures of which the most prominent partial structures are the concrete hierarchical article microstructures. Consequently, to obtain its concrete hierarchical microstructure da₁ should be segmented in a **first methodological step** in such a way that all other text constituents prevail. Because da₁ contains no item text these will only be elementary items. Therefore the method of non-exhaustive functional-positional segmentation will be applied to da₁. This presents a second variant of the method of functional-positional segmentation of which the correctness conditions include that all segmentation results only apply to the items. The segmentation convention C₁ applies, according to which hyphens (e.g. those in "-es" and "-e" in da₁) are regarded as part of the item form of an item with cohesion instructions. Another segmentation convention C₂, not to be applied here, could indicate that both the hyphens should be regarded as immediate partial items, i.e. as condensed word stem items. This would imply that "-es" and "-e" are not elementary items but non-elementary items.

In the following discussion the segmentation procedures are not explained in detail (cf. e.g. Wiegand 2000: 235 ff). Only the segmentation result is listed in such a way that each elementary and non-elementary item, presented in da₁, is given a lower-case letter, preceding it in round brackets, as
an item name. It should be noted that item names are individual names. Furthermore, every item of the class of items is related to the same general dictionary object directed item function to which it belongs. The latter goes for statements of the form "\( \alpha \in \beta \)" with "\( \alpha \)" as variable for items and "\( \beta \)" as variable for class symbols that are abbreviations of item class names. In addition "\( \in \)" is the symbol for the element-class-relation, in the sense of is an element of or in the sense of is included in.

(a) **Schurz**, der; -es, -e [\( \ldots \)]; a \( \in \) CF (= comment on form)

(b) **Schurz**; b \( \in \) IFLS (= item giving the form of the lemma sign; here: lemmatic item giving a noun)

(c) der; -es, -e; c \( \in \) IMor.n (= item giving the morphology at nouns)

(d) der; d \( \in \) Iart (= item indicating an article)

(e) -es, -e; e \( \in \) IDecC (= item indicating the declination class)

(f) -es; f \( \in \) c.ISF (= condensed item giving the singular formation)

(g) -e; g \( \in \) c.IPIF (= condensed item giving the plural formation)

(h) [\( \ldots \)]; h \( \in \) I-Pron (= item for the normal pronunciation; this is a zero item, presented in the concrete structure by a blank item (BI) which is also identified positionally over its neighbouring variables "i" and "j")

(i) **bes. von Handwerkern** [\( \ldots \)] lederner S.; i \( \in \) CS (= comment on semantics)

(j) [\( \ldots \)] **bes. von Handwerkern** [\( \ldots \)] aus fester Material; j \( \in \) pragseml (= pragmatic-semantic item)

(k) [\( \ldots \)]; k \( \in \) I-pragZL (= item for the pragmatic zero labelling; this also is a zero item)

(l) **bes. von Handwerkern** [\( \ldots \)] aus fester Material; l \( \in \) c.IPM (= condensed item giving the paraphrase of meaning)

(m) ein lederner S; m \( \in \) c.IComEx (= condensed item giving the competence example).
The items b, d, f, g, h, k, l and m are elementary items, i.e. without the possibility of further functional-positional segmentation. The items a, c, e, i and j are non-elementary items and functional-positional segmentation is possible.

In a second methodological step we are now constructing the element-homogeneous structure-carrying set for $p \text{MiS}^c(d_a)$, the concrete (c) hierarchical (h) pure (p) microstructure (MiS) of $d_a$. The elements of this structure carrying set are all methodically obtained items a-m and the complete dictionary article $d_a$. The structure-carrying set is called $S_{\text{MiS}}^c(d_a)$: It can be presented as follows with 14 elements:

$$S_{\text{MiS}}^c(d_a) = \{d_a, a, b, c, d, e, f, g, h, i, j, k, l, m\}$$

In a third methodological step we define for $S_{\text{MiS}}^c(d_a)$ a two-place non-reflexive (and consequently asymmetrical) as well as transitive relation of the type of the precedence (p) relation – called $R_p^c(d_a)$ - with the relation term $x$ precedes $y$, in which "$x$" and "$y$" are variables for items. $R_p^c(d_a)$ belongs to the non-reflexive partial ordering relations. The following applies: $R_p^c(d_a) \subseteq S_{\text{MiS}}^c(d_a) \times S_{\text{MiS}}^c(d_a)$. The structure-shaping relation $R_p^c(d_a)$ contains as elements all those ordered pairs, e.g. $<a, d>$ and $<f, g>$, that, when their coordinates are put in the relation term $x$ precedes $y$, will deliver true sentences, e.g. $a$ precedes $d$ (≈ Schurz precedes "der"). $R_p^c(d_a)$ therefore fully determines which items from $d_a$ will precede which other items from $d_a$. The same also applies to other relations (in further examples) that belong to the type of the precedence relation. Precedence relations are also called predecessor-successor-relations.
In a fourth methodological step we define for the structure-carrying set $S_{MIS}^c(da_1)$ a two-placed reflexive, antisymmetrical and transitive relation of the partitive (part) relation type, called $R_{part}^c(da_1)$, with the relation term \(x\) is an item as part of \(y\), with "\(x\)" as variable for items and "\(y\)" as variable for items and \(da_1\). The following applies: $R_{part}^c(da_1) \subseteq S_{MIS}^c \times S_{MIS}^c$ and $R_p^c(da_1) \cap R_{part}^c = \emptyset$. The relation $R_{part}^c(da_1)$ belongs to the reflexive partial ordering relations. It contains as elements those ordered pairs, e.g. \(<d, c>\) and \(<a, da_1>\) that, when their coordinates are put in the relation term \(x\) is an item as part of \(y\), will deliver true sentences, e.g. \(d\) is an item as part of \("\text{der}; -es, -e"\). The relation $R_{part}^c(da_1)$ therefore fully determines (i) which items from \(da_1\) are partial items from which other items from \(da_1\), as well as (ii) which items are parts of \(da_1\).

Following the execution of the fourth methodological step $pMIS_h^c(da_1)$, the pure concrete hierarchical microstructure of \(da_1\), is given as an ordering structure, determining which items from which item classes are presented in which order in the dictionary article \(da_1\). By doing so it can also be determined that hierarchical pure article microstructures from completely condensed dictionary articles (cf. Wiegand 2003 [2004]: 207 f) can occur as article internal item distribution structures.

Concrete hierarchical pure microstructures can be presented by means of ordered tree diagrams (cf. Wiegand 1989a: 464ff; 2000: 235ff). They can furthermore occur along with the relevant and isomorphous abstract hierarchical microstructures in a commented structural diagram. Abstract microstructures can be obtained because of the fact that both the structure-shaping ordering relations are defined with regard to one structure-carrying
set that does not contain da₁ and the concrete items a-m, but rather the class DA of the dictionary articles (e.g. of a specific dictionary) as well as the item classes to which the items a-m belong. This structure-carrying set - called $S^{a}_{\text{Mis}}(\text{da₁})$ - can be presented as follows when used according to the class symbols introduced in (a)-(m):

$$S^{a}_{\text{Mis}}(\text{da₁}) = \{\text{DA}, \text{CF}, \text{IFLS}, \text{IMor.n}, \text{lart}, \text{IDecC}, \text{c.ISF}, \text{c.IPIF}, \text{I-Pron}, \text{CS}, \text{pragsemI}, \text{I-pragZL}, \text{c.IPM}, \text{c.IComEx}\}$$

The single commented structural diagram for the concrete and isomorphous abstract hierarchical pure microstructure of da₁ is given in Fig. 2-2.

**Fig. 2-2:** Single commented structural diagram of the abstract (and isomorphous concrete) hierarchical microstructure of da₁ in Fig. 2-1. Conventions of presentation: "x ------ y" means (read from the bottom to the top) the same as x is an item as part of y; "u -- -- v" means (read from the bottom to the top) the same as u is an element of v (= u ∈ v, where
"v" is a class symbol. "|" means the same as at the same time; LEFT CORE STRUCTURE/MiS should be read as left core structure as partial structure of the microstructure (MiS); abbreviations (all abbreviations which label nodes are class symbols for classes of items with the same dictionary topic directed genuine item function): A. = ABSTRACT; H = HIERARCHICAL; DA = dictionary article; CF = comment on form; CS = comment on semantics; IFLS = item giving the form of the lemma sign; IWF.ns = item giving the word form of the nominative singular; ISP = item giving the spelling; IMor.n = item giving the morphology at nouns; I-nPron = item for the normal pronunciation; Iart = item indicating an article; IDecC = item indicating the declination class; c.ISF = condensed item giving the formation of the singular form; c.IPF = condensed item giving the formation of the plural; pragsemI = pragmatic-semantic item; I-pragZL = item for the pragmatic zero labeling; c.IPM = condensed item giving the paraphrase of meaning; c.IComEx = condensed item giving a competence example; IB\_ij = blank item of which the structural position is determined via the citation of the preceding variable "i" and the following variable "j" with the corresponding class symbols of both neighbours;

Numerous types of pure microstructures can be distinguished. An incomplete overview can be found in Wiegand (2002: 573-580).

3. Hybrid article internal text constituent structures

In this section we are looking at hybrid article microstructures as an example of hybrid article internal text constituent structures. These hybrid article microstructures can be seen in a dictionary article when it displays at least one functional item addition. For dictionary articles with functional item additions both a pure and a hybrid article microstructure prevails. Functional item additions are functional text segments by means of which, as is the case with items, something is presented that, in contrast with items, does not display text constituent status (cf. with regard to functional item additions e.g. Wiegand 2005 [2006]: 326-330; 2007: 192ff). They are not, as items are, obtainable as a result of a functional-positional segmentation.
This is because they do not have their own position in the language chain (as e.g. the sunken dot underneath the item form segment "i" of the item giving the form of the lemma sign in da3, cf. Fig. 2-1) or because, when they do have an own position in the language chain, a functional-positional isolation is not possible, e.g. the semantic inner gloss "Facharzt" in da2 in Fig. 2-1, where a segmentation leads to both non-functional text segments "er muß einen Spezialisten" and "aufsuchen". The sunken dot in da3 belongs to the bottom expanded functional item additions; it is a bottom expanded bifunctional item addition that is upwardly addressed at the item form segment "i". It realizes a word accent marker which is also a marker of the vowel quantity as being short (Wacc\vocq.s). The same applies for the sunken dot in da2. If a concrete and an abstract hierarchical pure microstructure are allocated to da3 then these will be obtainable in the same way as the microstructures from da1. It can be presented as in Fig. 3-1.

Fig. 3-1: Single commented structural diagram for the abstract (and isomorphous concrete) hierarchical microstructure, displayed by da3 in Fig. 2-1. New abbreviations: ISyl = item giving a syllable; IsyID = item giving the syllable division; Ias = item giving the ac-
centuated syllable; \( \text{\textbf{I}} \) means the same as \textit{bottom expanded}; \text{Wacc\textbackslash vocq.s} = \text{marker for word accent and vowel quantity as short; IComEx}^2 = \text{item consisting of two items giving the competence examples.}

When looking at the structural diagram in Fig. 3-1 it is noticeable that in the abstract hierarchical microstructure the word accent marker which also marks the short vowel quantity does not have its own node. It therefore displays no own structural place in the ordered tree diagram that is linked to another structural place in the same tree diagram by means of at least one interface. The occurrence of this bottom expanded bifunctional addition in \( \text{da}_3 \) can only be seen from the two node labels "IFLS\( \text{\textbf{I}} \) Wacc\textbackslash vocq.s | IWF.ns | Isp" and "Ias\( \text{\textbf{I}} \) Wacc\textbackslash vocq.s". In the accompanying isomorphous concrete microstructure the sunken dot in the bottom expanded item giving the syllable accent can therefore also not display an own structural place. It rather appears in "\text{richts}" as in the concrete text of the dictionary article! If in the presentation of article microstructures you do not only want to take explicit cognizance of the article internal distribution of items and, when necessary the distribution of item texts, but, if available, also of functional item additions, you have to proceed from pure to hybrid microstructures. Without going into all formal details, \( \text{da}_3 \) has been used as an example representing all bottom expanded functional item additions to explain this.

Next we first look at the bottom expanded item giving the syllable accent "\text{richts}" from \( \text{da}_3 \). It is an immediate partial item of the bottom expanded item giving the form of the lemma sign and therefore belongs to the lemmatic partial items, as is the case with the four syllable and four syllable division items. All lemmatic partial items with the exception of the item giving the syllable accent, are non-expanded elementary items. In contrast, the item giving the syllable accent belongs to the single expanded elementary items and among these to the bottom expanded ones (cf. Wiegand 2005
[2006]: 289). While non-expanded elementary items do not display any internal structure the situation is different in the case of expanded elementary items. They can display an internal hybrid structure. Their elements are obtainable at top or bottom expanded elementary items through the application of a method of functional segmentative isolation. With an application of this method horizontal segmentation sections are structured in such a way that the top and the bottom expanded functional item additions are separated from the elementary items. In the case of the bottom expanded item giving the syllable accent "richts" it means that the result of the segmentation consists of the segment "richts" and the sunken dot. It should be noted that both segments are parts of "richts". To be able to determine the exact position of the sunken dot, a non-functional-positional segmentation of "richts" is performed, resulting in the following item form segments: "richts" (with "|" marking the segmentation joint); "r" is the front, "i" the middle and "chts" the back item form segment. The following statement applies: \( r < i < chts \) (with "<" indicating precedes).

To be able to present the internal item (i) structure (s) of "richts", the bottom expanded item giving the syllable accent, we proceed step by step. First we build the structure-carrying set \( S_{\text{c}}(richts) = \{i,*\} \). This structure-carrying set contains two concrete (c) elements: the middle item form segment "i" and the sunken dot. For \( S_{\text{c}}(richts) \) we now define a two-place non-reflexive and thereby asymmetrical as well as non-transitive relation \( R_{\text{a}}(richts) \) of the type of the (text architectonical) below-relation, to which the relation term \( x \ is \ below \ y \) belongs, with "x" as variable for functional item additions and "y" as variable for their reference address. The relation \( R_{\text{a}}(richts) \) determines for the structure-carrying set a structure belonging to the vertical item architectures. This is because structures of which the structure-shaping relations are above- and below-relations and/or left-of- and
right of-relations are called *architectures* (cf. Wiegand 2001: 191ff). Vertical item architectures are presented by the application of the same formal presentation means as vertical text architectures of dictionary articles (cf. in this regard e.g. Bergenholtz/Tarp/Wiegand 1999: 1791ff u. Wiegand 2001: 191ff). The general image of the architecture for the bottom expanded item giving the syllable accent from da₃ is given in Fig. 3-2. Fig. 3-2 furthermore contains the general image of the architecture of the above given item giving the form of the lemma sign "Hédling", from da₄ in Fig. 2-1, expanded with a vowel identification marker (IM.Vow). The elements of this vertical item architecture are in an analogous way obtainable as those of the item giving the syllable accent in da₃. In stead of the *below*-relation a relation of the *above*-relation type is defined for the structure-carrying set.

![Diagram of abstract vertical item architecture](image)

**Fig. 3-2:** General images of the architecture for abstract vertical item architecture of the bottom expanded item giving the accent of the syllable from da₃ (1) and the top expanded item giving the form of the lemma sign from da₄ (2). *Abbreviations:* f.IFS = front item form segment; m.IFS = middle item form segment; b.IFS = back item form segment; b.exp = bottom expanded; t.exp = top expanded; IM.Vow = identification marker of a vowel; "x••••• y" is the same as *x is below y*, when the arrow points to the top, and *x is above y* when the arrow points to the bottom.

Now we expand the structure-carrying set $S^c_{\text{richts}}$ with "r", the front item form segment, and furthermore with "chts", the back item form seg-
ment as well as with the non-expanded item giving the accent of the syllable richts and finally still with the bottom expanded item giving the accent of the syllable richts. This leads to an expanded element heterogeneous structure-carrying set, called $S^c_{byis}(\text{richts})$ - a set with six elements. It can be presented as follows:

$$S^c_{byis}(\text{richts}) = \{i, , r, chts, richts, rchts\}$$

For this structure-carrying set which contains three item form segments, one functional item addition and a non-expanded as well as a bottom expanded item as elements, we define the three structure-shaping relations of which we already know the accompanying relation types; first we define a relation belonging to the precedence relations type, called $R^c_p(\text{richts})$, with the relation term $x$ precedes $y$, with "$x$" and "$y$" as variables for text segments. The following applies: $R^c_p(\text{richts}) \subseteq S^c_{byis}(\text{richts}) \times S^c_{byis}(\text{richts})$.

Furthermore for $S^c_{byis}(\text{richts})$ a relation of the partitive relation type, called $R^c_{\text{part}}(\text{richts})$, is defined, with the relation term u is a part of v, with "u" and "v" as variables for text segments. The following applies: $R^c_{\text{part}}(\text{richts}) \subseteq S^c_{byis}(\text{richts}) \times S^c_{byis}(\text{richts})$ as well as $R^c_{\text{part}}(\text{richts}) \cap R^c_p(\text{richts}) = \emptyset$.

Finally we define for $S^c_{byis}(\text{richts})$ a relation of the text architectonic below-relation type called $R^c_{\text{bel}}(\text{richts})$, with the relation term r is below s, with "r" as variable of functional item additions and "s" as variable for their reference addresses. The following applies: $R^c_{\text{bel}}(\text{richts}) = S^c_{byis}(\text{richts}) \times S^c_{byis}(\text{richts})$; $R^c_{\text{bel}}(\text{richts}) \cap R^c_p(\text{richts}) = \emptyset$; $R^c_{\text{bel}}(\text{richts}) \cap R^c_{\text{part}}(\text{richts}) = \emptyset$.

As a result of all the operations mentioned we obtain the concrete hierarchical architectonically enriched item structure of the bottom expanded
item giving the syllable accent "richts" from da3, as presented in Fig. 3-3(1). Fig. 3-3(2) contains the accompanying isomorphous abstract hierarchical architectonically enriched item structure. This structure is obtained by defining for the element-heterogeneous structure-carrying set.

\[ S_{\text{hys}}(\text{richts}) = \{ \text{m.IFS, Wacc|vocq.s, f.IFS, b.IFS, Ias\|Wacc|vocq.s} \} \]

three relations, similar to the three defined for \( S_{\text{hys}}(\text{richts}) \).

![Diagram](image)

**Fig. 3-3**: Single commented and with architectonically components enriched tree diagram for the concrete (1) and the isomorphous abstract hierarchical item structure (2) of the bottom expanded item giving the syllable accent from da3; "x→→→ y" means the same as x is below y, "u→→→ v" means the same as u is a part of v, with "u" as a variable for text segments that are not text constituents.

The two tree diagrams presented in Fig. 3-3 can be combined in a single structural diagram, as given in Fig. 3-4.
A.H. ARCHITECTONICALLY ENRICHED ITEM STRUCTURE

Fig. 3-4: Single commented and with architectonically components enriched structural diagram for the abstract (and isomorphous concrete) hierarchical item structure of the bottom expanded item giving the syllable accent from da₃. Presentation conventions, as in Fig. 3-3; "x - - - - Y" means (read from the bottom to the top) the same as x is an element of Y (≡ x ∈ Y)

It has been indicated that each dictionary article which contains at least a functional item addition can have both a pure and a hybrid article microstructure. The transition from a pure to a hybrid structure can also occur exclusively on the level of the presentation of the structure because it concerns strictly formal structure presentations. Accordingly the structural diagram of Fig. 3-4 is now integrated into the structural diagram of Fig. 3-1, to present the structural diagram of da₃. This is given in Fig. 3-5, whereby the complete rendering of the comment structure of the comment on semantics is refrained from because no changes occur in the right core structure.
Hierarchical internal-lemmatic architectonically enriched article microstructures belong to a subtype of the hierarchical architectonically enriched article microstructures. Other subtypes of this type are the hierarchical external-lemmatic architectonically enriched article microstructures, occurring in da₆ in Fig. 2-1, and the hierarchical internal- and external-lemmatic architectonically enriched article microstructure, occurring in da₄ in Fig. 2-1. All the mentioned types belong to the hierarchical hybrid article microstructures (cf. Fig. 3-12 and Fig. 3-13). Compare da₇ and da₈ in Fig. 3-6.
Up to now we have discussed item structures that belong to the type of hierarchical architectonically enriched item structures, which is a subtype of the hierarchical hybrid constituentless item structure. This latter structure type has a further subtype, i.e. the hierarchical internal expansion conditioned item structure (cf. Wiegand 2007: 201ff and 2008b and Fig. 3-13). When dealing with internal expanding functional item additions as e.g. in da2 and da7 we refer to inner gloss conditioned item structures, abbreviated as gloss conditioned item structures. The abbreviated term is sufficiently clear because postglossed items still belong to the non-elementary items, so that "post gloss conditioned item structures" cannot occur. In the following discussion we take a look at gloss conditioned item structures.

The item "er muß einen Spezialisten (Facharzt) aufsuchen" from da2 in Fig. 2-1, is an item giving a competence example internally expanded for a semantic gloss. It gets the item name a1, with a1 ∈ I(G.s)ComEx. The item a1 belongs to the elementary item, because a1 is functional-positionally not segmentable. a1 displays no item constituent or item microstructures as its partial structure. However, the item a1 still displays a structure, that a user who wants to utilise this item to obtain information will intuitively recognise. This concrete hierarchical gloss conditioned (gs) item structure (is) is obtainable in the following way. One starts by constructing an element-heterogeneous structure-carrying set, called, $S^c_{gs}(a_1)$, containing as ele-

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**Fig. 3-6:** Dictionary articles da7 and da8 from HWDG

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| da7: | **harsch** /Adj./ 1. ein harshcher (rauh, eisiger) |
| Wind — 2. /nicht adv./ harshcher (verharscher) |
| Schnee — 3. jmdm. h. (harsch, unwirsch) antworten |

| da8: | **Bub, der; -en, -en südöst. österr. schweiz.** |
| Knabe, Junge: ein kleiner, wilder B.; ein B. von fünf Jahren |
ments those segments that are obtainable through an application of the method of non-functional positional segmentation of \( a_1 \). \( S_{gcis}^c(a_1) \) can be presented as follows:

\[
S_{gcis}^c(a_1) = \{b_1, c_1, d_1, e_1, f_1, a_1\}.
\]

The elements of the structure-carrying set can be explained as follows:

- \( b_1 = \text{er muß einen Spezialisten} \); \( b_1 \in \text{fISeg} \) (= front item segment)
- \( c_1 = ( ; c_1 \in fMoT \) (= front marker of ordering together)
- \( d_1 = \text{Facharzt} \); \( d_1 \in G.s \) (= semantic inner gloss)
- \( e_1 = ) ; e_1 \in bMoT \); (= back marker of ordering together)
- \( f_1 = \text{aufsuchen} \); \( f_1 \in \text{bISeg} \) (= back item segment).

Following the construction of the structure-carrying set \( S_{gcis}^c(a_1) \) two structure-shaping relations are defined for it. One relation is of the precedence relation type, called \( R_p^c(a_1) \), with the relation term \( x \text{ precedes } y \) (with "\( x \)" and "\( y \)" as variables for text segments) as well as a relation of the partitive relation type, called \( R_{part}^c(a_1) \), with the relation term \( x \text{ is a part of } y \) (with "\( x \)" as variable for text segments and "\( y \)" as variable for internally expanded items. The following applies: \( R_p^c(a_1) \subseteq S_{gcis}^c(a_1) \times S_{gcis}^c(a_1) \); \( R_{part}^c(a_1) \subseteq S_{gcis}^c(a_1) \times S_{gcis}^c(a_1) \); \( R_p^c(a_1) \cap R_{part}^c(a_1) = \emptyset \). Fig. 3-7(1) presents the concrete hierarchical gloss-conditioned item structure, following the application of the above-mentioned processes. Defining for the structure-carrying set of the accompanying abstract (a) hierarchical gloss-conditioned (gc) item structure (is), called \( S_{gcis}^a(a_1) \), \( S_{gcis}^a(a_1) = \{\text{fISeg, fMoT, G.s, bMoT, bISeg, I(G.s)ComEx}\} \) two relations \( R_p^a(a_1) \) and \( R_{part}^a(a_1) \), corresponding to the
relations defined for $S'_{gei} (a_1)$, one obtains the abstract hierarchical gloss-conditioned item structure of $a_1$, presented in Fig. 3-7 (2).

Fig. 3-7: Single commented tree diagrams for the concrete and isomorphous abstract hierarchical gloss-conditioned item structure, as presented in the internally expanded item giving the competence example from $da_2$ in Fig. 2-1.

As both the tree diagrams in Fig. 3-3, both tree diagrams in Fig. 3-7 can be presented in a single structural diagram, presented in Fig. 3-8:

Fig. 3-8: Single commented structural diagram for the abstract (and isomorphous concrete) hierarchical gloss-conditioned item structure, which presents the internally expanded item giving the competence example in $da_2$ in Fig. 2-1.
For the gloss-conditioned item structures the following should be added: The article da7 in Fig. 3-6 contains two double glosses, to be precise in both the internally expanded meaning directed items giving the competence examples "ein harscher (rauer, eisiger) Wind" and "jmdm. h. (barsch, unwirsch) antworten". A double gloss is a gloss consisting of two immediately subsequent glosses. In both the mentioned items giving the competence examples both glosses of the double glosses belong to the same class, i.e. semantic glosses. Still a double gloss with two glosses from the same class is not regarded as a "homosegmental gloss", that is functionally-positionally segmentable in two similar class elementary glosses. The concept of homosegmental text segments rather applies only to items. As an example, the item "Knabe, Junge" is a (non-elementary) homosegmental item giving a synonym (Isyn^2), that is functionally-positionally segmentable in two (elementary) items giving a synonym (Isyn) (cf. Wiegand 2005 [2006]: 229 f). The reason for this stipulation with regard to glosses is because all internal expansion conditioned hierarchical item structures are designed as shallow hierarchical structures. That is, in simple terms, those structures which, when presented in an ordered tree diagram, besides the root nodes, only display terminal nodes, e.g. in Fig. 3-7 and 3-8, and in doing so only have edges and no edge routes. However, "homosegmental glosses" would thwart this structural idea while their presentation would lead to two edge routes that would lead from one root node (e.g. I(G.s)^2ComEx) across the nodes of the "homosegmental gloss" (e.g. G.s^2) to both nodes of the elementary glosses (e.g. G.s_1 and G.s_2). Contrary to this, structural diagrams for hierarchical gloss-conditioned item structures of items with an internally expanded double gloss must necessarily display the same formal format as the structural diagram in Fig. 3-9 for the internally expanded meaning directed item giving a competence example "ein harscher (rauer, eisiger) Wind" from da7 in Fig. 3-6.
Fig. 3-9: Single commented structural diagram for an abstract (and isomorphous concrete) hierarchical double gloss conditioned item structure, displaying the first meaning directed internally expanded item giving a competence example from da, in Fig. 3-6. Abbreviations: \( I(DG,s)ComEx \) mean. = for a semantic double gloss internally expanded meaning directed item giving a competence example; \( Dm \) = division marker

As can be seen in Fig. 3-7 to 3-9 and in the text describing the construction of gloss-conditioned item structures, these structures offer a view on non-typographical structural indicators. This means that gloss-conditioned and double gloss conditioned item structures do not occur as partial structures of article microstructures because they do not take non-typographical structural indicators into account. Hierarchical gloss- and inner gloss conditioned item structures rather occur as partial structures of article constituent structures, where the non-typographical structural indicators are regarded as text constituents. If you want to explicitly consider the hierarchical structure of internally expanded items in the presentation of hybrid article microstructures, you need hierarchical item structures in which the non-typographical indicators of item structures are not considered. Such item structures are called (according to Wiegand 2007: 201f) \textit{hierarchical mini-}

d\textit{mized internal expansion and gloss-conditioned item structures}. They can be obtained in two ways. If you already have, as is the case here, gloss-conditioned (or double gloss conditioned) item structures, you can reduce
the structure-carrying set with regard to the appropriate elements. Accordingly the structure-carrying set for the concrete hierarchical gloss- or double gloss conditioned item structures should first be reduced with regard to the elements; the structure-carrying set for the abstract hierarchical gloss- or double gloss conditioned item structures should accordingly be reduced with regard to the elements that are classes of non-typographical structural indicators. Secondly the relations defined for both structure-carrying sets should be restricted to the reduced structure-carrying set so that all ordered pairs be deleted in which as coordinates either (for the concrete structures) a non-typographical structural marker occurs, or (for the abstract structures) a class of non-typographical indicators occurs.

The example from da7 in Fig. 3-6, i.e. the item $a_1 = "er muß einen Spezialisten (Facharzt) aufsuchen", will give the following result:

(1) The structure-carrying set for the concrete structure, i.e. $S_{gcis}^c(a_1)$, will be reduced with regard to the elements $c_1$ and $e_1$, so that the reduced (r) structure-carrying set results in $rS_{gcis}^c(a_1) = \{b_1, d_1, f_1, a_1\}$. The relation $R_p^c(a_1)$ is restricted in such a way that the following of its ordered pairs, displaying $c_1$ or $e_1$ as coordinates, are eliminated: $<b_1, c_1>$, $<b_1, e_1>$, $<c_1, d_1>$, $<c_1, e_1>$, $<c_1, f_1>$, $<d_1, e_1>$ and $<e_1, f_1>$. The restricted (re) relation $reR_p^c(a_1)$ can then be given as follows: $reR_p^c(a_1) = \{<b_1, d_1>, <b_1, f_1>, <d_1, f_1>\}$. The relation $R_{part}^c(a_1)$ is also restricted in such a way that the following of its ordered pairs, displaying $c_1$ or $e_1$ as coordinates, are eliminated: $<c_1, a_1>$, $<e_1, a_1>$. The restricted (re) relation can then be given as follows: $reR_{part}^c(a_1) = \{<b_1, a_1>, <d_1, a_1>, <f_1, a_1>\}$.

(2) The structure-carrying set for the abstract structure, i.e. $S_{gcis}^a(a_1)$ are reduced with regard to the elements $fMoT$ and $bMoT$, resulting in the reduced...
(r) set of carriers \( r^{a}_{gcis}(a_{1}) = \{fISeg, G.s, bISeg\} \). The relation \( R^{a}_{p}(a_{1}) \) is restricted analogous to \( R^{a}_{p}(a_{1}) \) and can therefore be presented as follows:

\[
reR^{a}_{p}(a_{1}) = \{<fISeg, G.s>, <fISeg, bISeg>, <G.s, bISeg>\}.
\]

Finally \( R^{a}_{part}(a_{1}) \) is restricted analogous to \( R^{a}_{part}(a_{1}) \) and can therefore be presented as:

\[
reR^{a}_{part}(a_{1}) = \{<fISeg, I(G.s)ComEx>, <G.s, I(G.s)ComEx>, <bISeg, I(G.s)ComEx>\}.
\]

The execution of the drafted operations results in the concrete minimized gloss-conditioned item structure as well as the accompanying isomorphous abstract minimized gloss-conditioned item structure that displays the item giving the competence example \( a_{1} = \text{"er muß einen Spezialisten (Facharzt) aufsuchen"} \) from \( da_{1} \) in Fig. 2-1 that has been expanded for a semantic gloss. Both minimized structures have been presented with the structural diagrams in Fig. 3-10 (1). The drafted transition from gloss-conditioned to minimized gloss-conditioned item structures can also be implemented on the level of the formal presentation of structures when deleting the edges, leading to the nodes, which represent non-typographical structural indicators as well as the accompanying node labels and when changing the single commenting. When this is implemented with the help of the structural diagrams in Fig. 3-9, the structural diagrams in Fig. 3-10 (2) are obtained, with which the concrete and the accompanying isomorphous hierarchical minimized double gloss conditioned item structure is presented, as indicated by the first meaning directed internally expanded item giving a competence example from \( da_{7} \) in Fig. 3-6.
Fig. 3-10: Single commented structural diagrams for the concrete and for the isomorphous abstract hierarchical minimized item structure, which presents the item giving the competence example, internally expanded for a semantic gloss from da2 in Fig. 2-1 (cf. (1)) and which presents the first meaning directed item giving the competence example which has been internally expanded for a semantic double gloss from da7 in Fig. 3-6 (cf. (2))

It has already been determined that the hierarchical minimized gloss-conditioned respectively double gloss conditioned item structures can be obtained in two ways. Having described the first way, the following can now be briefly said about the second way: If you do not have the hierarchical gloss- respectively internal gloss conditioned item structures at your disposal one should, following the implementation of the non-functional segmentation, only select those text segments as elements of the structure-carrying set that are not non-typographical structural indicators. For this set one should define the two relations of the precedence and partitive relation type. For the abstract structure a structure-carrying set is constructed that only contains the classes of text segments as elements to which the elements of the structure-carrying set for the concrete structure belong. Likewise a relation of the type of the precedence and one of the type of the partitive relation are defined for the structure-carrying set for the abstract structure. The concrete and the abstract hierarchical minimized gloss-conditioned item structure which is obtained in this second way is naturally identical to both structures obtained when following the first way.
Item structures, as those presented in Fig. 3-10, function as partial structures of hybrid article microstructures, called *microstructure with minimized gloss-conditioned partial structure*. A *hybrid* microstructure of this type is seen in da7 in Fig. 3-6. The methodological way from which this type of structure is obtained, is presented in the subsequent characterized sections. The operations belonging to the individual sections are not individually introduced by means of da7 because operations of the same type have already been described by means of earlier examples. The following sections are distinguished.

(i) First, a functional-positional segmentation of da7 is done in order to have all the elementary and non-elementary items at your disposal.
(ii) Then all items are allocated to their item classes.
(iii) Then follows a non-functional positional segmentation of all three internally expanded items, in order to obtain all item-internal text segments.
(iv) The non-typographical structural indicators are sorted out because they are not considered in the construction of the structure-carrying set.
(v) The text segments are allocated to their text segment classes.
(vi) Then the element-heterogeneous structure-carrying set is constructed for the concrete hierarchical microstructure with internally expanded items.
(vii) Subsequently a relation of the precedence relation type is defined for this structure-carrying set.
(viii) Finally a relation of the partitive relation type is defined for the same structure-carrying set.

Having done this, one has at your disposal the concrete hierarchical microstructure with minimized gloss-conditioned partial structure. This can be presented by means of an ordered tree diagram of which the node labels are either the names of text segments (e.g. lower-case letters) or the mentioned text segments from da7. To obtain the abstract hierarchical microstructure
with minimized gloss-conditioned partial structure, the following methodological steps are required:

(ix) First the structure-carrying set is constructed for the abstract structure.

(x) For this structure-carrying set a relation of the precedence relation type is firstly defined.

(xi) Then a relation of the partitive relation type is defined for the same structure-carrying set.

After the execution of these operations one has the abstract hierarchical microstructure with minimized gloss-conditioned partial structure, as displayed in da7 in Fig. 3-6. This can be presented by means of an ordered tree diagram that displays the abbreviated names of the text segment classes as node labels. Both tree diagrams, one for the concrete and one for the abstract structure, can be joined together in one structural diagram. Due to its size it is divided in two and presented in Fig. 3-11a and 3-11b. The convention applies that a microstructure with minimized double gloss conditioned partial structure is allocated to articles which display glosses and double glosses.
**Fig. 3-11a**: Single commented structural diagram (first part) for the abstract (and isomorphic concrete) hierarchical microstructure with minimized double gloss conditioned partial structure, displayed in da, in Fig. 3-6. **Abbreviations**: IpSp = item giving the part of speech; IP = item giving polysemy; SCS.ph-l = left accommodated subcomment on semantics phased out to the left; SCS = subcomment on semantics.
Fig. 3-11b: Single commented structural diagram (second part) for the abstract (and isomorphous concrete) hierarchical microstructure with minimized double gloss conditioned partial structure, displayed in da7 in Fig. 3-6. Abbreviations: IusRe.syn = item giving usage restrictions with regard to syntax.

To be able to typologically arrange those hybrid text constituent structures of dictionary articles as well as their partial structure treated in this contribution, Fig. 3-12 and 3-13 give a typological excerpt from a typology of hybrid textual dictionary structures. Some definitions belonging to this typological excerpt are also given.
Fig. 3-12: Partially expanded commented typology diagram for an excerpt from a typology of hierarchical hybrid textual dictionary structures (first part); *Abbreviations*: TS = typology stage, TC = typology criterion; "→" means the same as the application of the Tc leads to the subdivision.
The following definitions belong to the typological excerpt in Fig. 3-12 and 3-13:

**D 3-1: hierarchical internal-lemmatic architectonically enriched article constituent structure**

A hierarchical internal-lemmatic architectonically enriched article constituent structure is an hierarchical hybrid article constituent structure of a dictionary article, of which the item giving the form of the lemma sign is
expanded at either the top or the bottom with at least one functional item addition, and which displays no other functional item additions.

(\textbf{D 3-2: hierarchical external- and internal-lemmatic architectonically enriched article microstructure})

A \textit{hierarchical external- and internal-lemmatic architectonically enriched article microstructure} is an hierarchical hybrid microstructure of a dictionary article of which the item giving the form of the lemma sign is expanded at either the top or the bottom with at least one functional item addition, and which displays at least one non-lemmatic item that has been expanded either at the top or the bottom.

(\textbf{D 3-3: hierarchical item microstructure with minimized gloss-conditioned partial structure})

A \textit{hierarchical item microstructure with minimized gloss-conditioned partial structure} is an hierarchical hybrid item microstructure of a non-elementary item that displays at least one elementary item that has been internally expanded with a gloss.

(\textbf{D 3-4: hierarchical external-lemmatic architectonically enriched item structure})

A \textit{hierarchical external-lemmatic architectonically enriched item structure} is a hybrid constituentless item structure of an elementary non-lemmatic item that has been expanded at either the top or the bottom.

\section{4. In conclusion}

Only the central part of hybrid textual dictionary structures could be discussed in this contribution, i.e. the hybrid text constituent structures of dictionary articles, using hybrid article microstructures and their hybrid partial
structures as example. Further hybrid structures are treated in Wiegand (2008). But still the presented excerpt should suffice to convince that the degree of explicitness as well as the information value of hybrid textual structures and that of their formal presentation are clearly of a higher level than that of pure textual structures with element homogeneous structure carrying sets. In particular it is so that the set of propositional contents that the lexicographer can present to the user by means of a dictionary article, as indicated in Wiegand (2008), can be calculated much more precise on the basis of hybrid article structures.

5. References

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