

Lexical Fields and Word-Formation ¹

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1.1. It is often assumed that the vocabulary of a language, and, correspondingly, the «lexicon» as that subcomponent of the grammar which formally represents the lexical competence of a native speaker, are structured by two unconnected and quite different organizational principles: a semantic and a formal-morphological one. Semantic structures result from the existence of various kinds of sense relations between lexical items, or, rather, the meanings of lexical items², on the basis of which one obtains sets of lexemes sharing a common basic meaning. These sets are usually referred to as lexical fields³. Formal-morphological structures derive from the ability of already existing lexical items to combine with other lexical items or with bound morphemes (prefixes, suffixes) forming morphologically complex new lexical items. These processes, i.e. compounding, prefixation, suffixation, etc., characterize the field of word-formation, and they are usually regarded as a means of extending the vocabulary almost without limits in order to adapt it to the ever-changing referential requirements of a speech community. This leads to a formal division of the vocabulary into primary and secondary lexemes, to take up a terminological distinction suggested by COSERIU (e.g. 1968:7). Primary

¹ An earlier version of this paper was read at the Universities of Vienna and Stockholm in March and May 1979, and I should like to express my gratitude for the numerous helpful comments which I received on these occasions. Furthermore, I should like to thank Colin Foksett and Leonhard Lipka for some valuable suggestions.

² For LYONS (1977:197ff.), sense-relations hold between complete linguistic signs, while for COSERIU (e. g. 1968:3) they hold only between the meanings of linguistic signs.

³ There is considerable terminological confusion in this area, cf. LIPKA (1980:93-97). My own use of the term is on the whole equivalent to Coseriu's use of the terms «Wortfeld» and «champ lexical»; for a more detailed survey, cf. KASTOVSKY (1981: 4.4.4.6.).

lexemes, e.g. *big*, *mountain*, *give*, *in*, etc., are simple, arbitrary linguistic signs in the sense of Saussure. Secondary lexemes, e.g. *spaceship*, *steamboat*, *sailing boat*, *rewrite*, *atomize*, *whiten*, *rider*, *departure*, *disestablishmentarianism*, etc., are lexical syntagmas. As such they are characterized by a determinant/determinatum relation; they are relatively motivated with regard to their constituents and parallel formations; and they are based on certain morphological, semantic, and syntactic patterns.

1.2. While the morphological and the semantic aspects of word-formation are quite obvious and uncontested, its syntactic aspect is by no means uncontroversial. This is most obvious in the controversy between the so-called transformational and lexicalist hypotheses in generative-transformational grammar. The former relates word-formation directly to the syntactic rules of the grammar by deriving word-formation syntagmas transformationally from underlying representations which are identical or at least closely related to those also underlying syntactic constructions such as relative or complement clauses, infinitives, gerunds, etc. (cf. KASTOVSKY 1981: 6.3.2.). Accordingly, (1a) and (1b-e), and (2a) and (3b. c), respectively, would have similar underlying representations:

- (1) a. Peter regretted Harriet's early departure.
 b. Peter regretted Harriet's departing early.
 c. Peter regretted Harriet having departed early.
 d. Peter regretted that Harriet had departed early.
 e. Peter regretted the fact that Harriet had departed early.
- (2) a. I know an alleged discoverer of time-travel.
 b. I know someone having allegedly discovered travelling through time.
 c. I know someone of whom it is alleged that he has discovered that/
 how one can travel through time.

Adherents of the lexicalist hypothesis, on the other hand, would relegate such relationships to the lexicon, regarding word-formation as a purely lexical matter.

These two positions do not constitute genuine alternatives, however, but only reflect the inherently ambivalent position of word-formation with regard to syntax and the lexicon. Thus there are numerous phenomena similar to (1) and (2) which require a syntactic explanation and can best be handled transformationally (cf. KASTOVSKY 1981: 6.1.2.-3.). The close relationship of word-formation to the lexicon, which cannot be denied, of course, can then be regarded as a kind of spin-off effect (LJUNG 1977:175) due to the format of the output of word-formation rules: in contradistinction to regular syntactic transformations, it consists of lexical items (lexemes), which can readily be incorporated into the lexicon as fixed units and can therefore also be recalled as such. This aspect accounts for the view that word-formation is a means of systematically enriching the lexicon. Thus both aspects, the syntactic and the morphological one, are equally important.

1.3. In descriptions of the lexicon, semantic and formal-morphological structures are as a rule kept strictly apart. Thus COSERIU (1968:7) regards both lexical semantics and word-formation as legitimate parts of «lexematics», as he calls the functional analysis of the vocabulary. Nevertheless, he treats them as two basically unrelated phenomena, viz. as primary paradigmatic lexical structures or lexical fields and secondary paradigmatic lexical structures or word-formation. Both are kept apart from a third type of relation between lexical items, viz. syntagmatic lexical structures or lexical solidarities. These describe the same kind of phenomenon as the selection restrictions in generative grammar, although from a purely semantic rather than a syntactic point of view (KASTOVSKY 1980b). Thus no direct relationship between these subdivisions is assumed, although Coseriu does not deny that word-formations may function in lexical fields alongside primary lexemes. But this is regarded as a by-product only of their integration into the lexicon, while the structures themselves are strictly kept apart.

1.4. From a purely structural-analytical point of view⁴ aiming at an inventory of lexical structures, such a separation is not only useful but necessary. But it leads to complications in a generative-synthetic description, which regards grammar as «a system of rules that express the correspondence between sound and meaning» (CHOMSKY 1971:183), because it neglects the interaction of these types of structure characterizing important relations and generalizations in the lexicon. It is the aim of this paper to investigate some of these interrelations and interactions more closely, and I hope to show that, at least on the semantic level, the lexicon is organized according to uniform principles, of which primary and secondary paradigmatic structures and lexical solidarities are only different aspects.

2.1.1. I will begin with some observations from historical linguistics, which already provide a good indication of the kind of relationship that obtains between primary and secondary paradigmatic lexical structures. These observations relate to the fact that there are transitions between these types of structures in both directions.

2.1.2. One factor involved in a lexeme's transition from monomorphemic to polymorphemic, i.e. syntagmatic status is folk-etymology. This refers to the reanalysis of a monomorphemic lexical item (moneme) as consisting of more than one morpheme on the basis of phonetic associations with morphemes resembling parts of the reinterpreted item. Se-

⁴ For the distinction between the analytical and the synthetic approach to semantics and word-formation, cf. KASTOVSKY (1981: 1.2., 3.2.2.) and BREKLE/KASTOVSKY (1977b).

mantic analogy may also play a role in this process, which is still little understood. Examples are

- (3) OE *scamfæst* → Mod. E *shamefaced*
asparagus → *sparrow-grass*
 E *hammock* → G *Hängematte*.

2.2.1. Similar processes are involved in the reinterpretation of the direction of the derivation with backformations. A case in point is the relationship between *peddle* and *peddler/pedlar* (MARCHAND 1969:391ff). Historically, *peddle* vb was backderived from the originally monomorphemic noun *peddler* with the meaning 'act as peddler'. In the course of time, this relationship came to be reversed by analogy with the usual pattern *write* : *writer*. As a result, *peddler* was reinterpreted as a bimorphemic lexeme meaning 'someone who peddles', i.e. as a derivative from *peddle*, which was originally the derivative but must now be regarded as a moneme acting as the basis for the derivative *peddler*.

2.2.2. These phenomena, however, concern individual cases only and are not pattern-forming. Closely related, but much more important, are the processes which lead to the adoption of a foreign word-formation pattern and to its becoming productive in the target language.

English prefixes and suffixes of Latin or French origin such as *de-*, *co-*, *dis-*, *in-*, *re-*; *-able*, *-ize*, *-ify*, *-ive*, *-ation*, etc. were not borrowed into English directly as isolated morphemes. Rather, they were taken over as constituents of foreign word-formation syntagmas which were borrowed into English, such as *deplume*, *decipher*, *co-author*, *disallow*, *recharge*, *acceptable*, *harmonize*, *edification*, etc. But these loans could be recognized as word-formations in English only if the corresponding bases had also been borrowed. Thus *acceptable* would be a moneme in English if the verbal base *accept* had not been borrowed as well. Only then did a derivative relationship develop between *accept* and *acceptable*, and *acceptable* could be interpreted as a syntagma. And it was only on the basis of such pairs that these affixes could become productive in English itself. There are two aspects to this phenomenon which are of particular interest in this connection.

First of all, often a Latin or French derivative was borrowed before its base was also adopted. Consequently, such loans lost their status as word-formation syntagmas in the process of borrowing and became monemes in English, until their bases were also taken over. Only then did they regain their syntagmatic status. There is thus a constant give and take between primary and secondary lexemes from this point of view, which is only possible, however, if the semantic structures of simple lexical items and word-formation syntagmas closely resemble each other.

Secondly, the base of the original derivative may not have been borrowed, as was the case with *laudable*, *magnify*, *pensive*, *receive*, *discern*,

inert, *inane*, which have therefore remained unanalysable monemes in English. But, on the other hand, a word like *laudable*, due to its origin as the Latin derivative *laudabilis* from *laudare*, will have a semantic structure which is completely analogous to the semantic structure of a syntagma such as *acceptable*. So here again we have a strong indication that the semantic structures of primary and secondary lexemes must be extremely similar.

2.3.1. In contradistinction to the phenomena described so far, the transition from a motivated syntagma to a moneme is a gradual process. Synchronically, we are confronted with a scale or cline of various degrees of motivation; diachronically this means that a word-formation syntagma may move along this scale from complete motivation to complete arbitrariness. This development is triggered by the lexicalization of word-formations⁵, i.e. their incorporation into the general, accepted vocabulary in a fixed, often somewhat idiosyncratic meaning.

2.3.2. The specialization of meaning often accompanying the lexicalization of a word-formation syntagma may be due either to the addition of certain semantic components to the syntagma as a whole, or to some change in the meaning of the constituents, or both. As a result, the overall meaning of the respective word-formation can no longer be deduced completely from the meanings of the constituents and the structural meaning of the word-formation pattern; rather, additional information is required, which constitutes the first step towards complete idiomatization. This can be illustrated by the following examples.

For the correct interpretation of *rattlesnake* we need nothing more than the simple syntactic paraphrase 'snake which can rattle'. But for *callboy* or *callgirl* a definition as 'boy who calls' and 'girl who is called', respectively, is by no means sufficient (cf. LIPKA 1978:489). The restriction to these two paraphrases is already an indication of their lexicalization and the beginnings of idiomatization, because these two nouns could theoretically just as well mean 'boy who is called' and 'girl who calls'. In order to understand *callboy* correctly, one has to know that this formation refers to someone who summons the actors onto the stage; and a *callgirl* is by no means just any girl one talks to on the phone, but rather some female one calls up for some very specific, well-known purpose. It would not do to call one's girlfriend a *callgirl* just because one happens to call her up once in a while and invites her home. Idiomatization has progressed even further in the case of *blackboard* due to a change in the object referred to by this compound: blackboards today are usually green and not black (cf. LIPKA 1977:156). And the compound *butterfly* is completely idio-

⁵ The role of lexicalization in word-formation is discussed in greater detail e. g. in KASTOVSKY (1981: 5.2.9. ff.) and LIPKA (1977; 1981).

matic, since its meaning no longer has anything to do with the meanings of its constituents. From a purely formal point of view, *butterfly* is still a syntagma; from the point of view of the relation between meaning and form it behaves like a simple lexical item. This borderline case thus has the same status as syntactic idioms like *kick the bucket*, *spill the beans*, *pull someone's leg*, etc.

Idiomatization can be accompanied by formal demotivation, which results in a moneme on the morphological level, too, e.g.

(4)	OE hlāfweard	'loaf-guard'	→ lord
	OE hlǣfdige	'loaf-kneader'	→ lady
	OE hūswif	'housewife'	→ hussy
	OE frēond	'friend'	< frēon 'love' → friend
	OE fēond	'enemy'	< fēon 'hate' → fiend.

Friend and *fiend* have lost their syntagmatic status because their verbal bases no longer exist and, moreover, the derivative pattern has also become extinct.

It is not likely, however, that this process will have fundamentally altered the underlying semantic structures, although some modifications have of course taken place: all the words in (4) continue to refer to persons, *butterfly* still denotes some kind of insect, etc. Thus, from a diachronic point of view there is considerable evidence for the assumption that on the semantic level there exist close parallels between primary and secondary lexical structures.

3.1. Turning now to synchronic considerations, the same conclusion results from a comparison of lexical solidarities and word-formation syntagmas. Lexical solidarities are defined by COSERIU (1967) as syntagmatic implications holding between various types of lexical structures, which are due to the fact that the meaning of some lexeme, or of a whole lexical field (i.e. of an archilexeme) is contained in the meaning of some other lexeme where it functions as a semantic component⁶. In this sense, the verbs *bark*, *neigh*, *miaow* imply the nouns *dog*, *horse*, *cat* as agents; *fell* implies *tree* as object; *see*, *look* and *hear*, *listen* imply *eye* and *ear*, respectively, as instruments; similarly, *kiss* implies *lips*, *sweep* implies *broom*, etc. BALLY (1944:135 ff.) talks in this connection of implicit syntagmas or of «motivation par cumul des signifiés»; GRUBER (1976) uses the

⁶ Coseriu in fact distinguishes three types of lexical solidarity, viz. «implication», «selection», and «affinity», depending on whether a lexeme, an archilexeme (lexical field) or a classeme (lexical class) is involved in this relationship. If, as will be suggested below (cf. 4.3.), the distinction between semes and classemes, and correspondingly, between lexical fields and lexical classes, is given up, this tripartite classification reduces to two types of lexical solidarities, cf. KASTOVSKY (1980b, 1981: 4.1.3. ff.) and VIEHWEGER et al. (1977:344ff., 353).

term «incorporation», and LYONS (1977:262) the term «encapsulation» for basically the same phenomena.

Now PORZIG, who was probably the first to call attention to this phenomenon, referring to it as «wesenhafte Bedeutungsbeziehungen», pointed out that pairs like *hämmern* : *Hammer* (*hammer* vb : *hammer* sb) etc. exhibit the same type of relation (PORZIG 1934 [1973]: 80f.). COSERIU (1967: 297), however, rejects this partial identification of word-formation processes and lexical solidarities. He regards word-formation as a primarily paradigmatic process having a syntagmatic basis, e.g. *mit dem Hammer* + verbalization → *hämmern*, in contradistinction to lexical solidarities, which are basically a syntagmatic phenomenon caused by paradigmatic oppositions, e.g. *schneiden* + *Zahn* = *beißen*, *schneiden* + *Baum* = *fällen*, *schneiden* + *Gras/Getreide* = *mähen*. From a purely analytic point of view focussing on morphological distinctions, this may be justified. From a genuinely semantic point of view, however, this strict separation strikes me as unsatisfactory and incoherent. Rather, it seems to me that these two phenomena are much more closely related than Coseriu is inclined to admit. In fact, pairs like *hammer* vb : *hammer* sb, *shovel* vb : *shovel* sb, *telephone* vb : *telephone* sb, *knife* vb : *knife* sb, etc. differ from lexical solidarities only in that the semantic implication is accompanied by a formal implication. In word-formation syntagmas, one lexeme is contained in the other both semantically and formally, and it is this kind of formal-semantic implication which is the essential characteristic of word-formation. Conversely, we might speculate that the sense-relations characterizing the structure of the primary vocabulary are taken up in word-formation and are made explicit by corresponding formal relations, which then accounts for the relatively motivated character of the resulting lexical items.

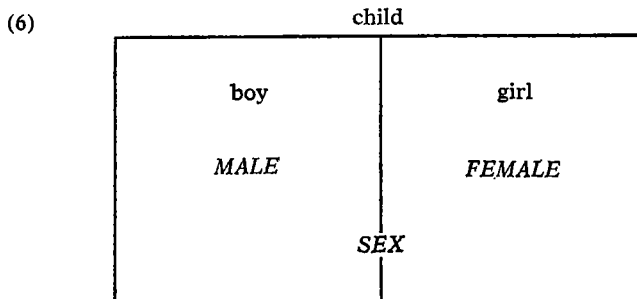
3.2. We may now ask how these relations can be described and explained in a more general framework, and how this will affect the overall structure of the lexicon and its role in the grammar. I will therefore now turn to a discussion of some basic assumptions inherent in the theory of lexical fields as outlined by Coseriu, at the same time evaluating, reinterpreting, and, if necessary, modifying them in the light of the problem posed: of providing a coherent, explanatory description of lexical structures.

4.1. As is the case in most modern semantic theories, Coseriu proceeds from the assumption that lexical meanings are basically relational. As such they are based on oppositions between lexical items and can therefore be regarded as sums of meaning differences. To quote a well-known example, the lexemes *boy* and *girl* can be analyzed as having the meanings 'male, not adult, human being' and 'female, not adult, human being', respectively, on the basis of the following minimal oppositions:

- (5) a. boy : girl = man : woman = stallion : mare = foal : filly ... =
MALE : *FEMALE*
 b. man : boy = woman : girl = adult : child = stallion : colt =
 mare : filly = horse : foal ... = *ADULT* : *NOT ADULT*
 c. man : stallion = woman : mare = child : foal = human (man) :
 horse ... = *HUMAN* : *EQUINE*.

This kind of semantic analysis is explicitly modelled on the decomposition of the phonemes of a language into minimal distinctive features on the basis of minimal oppositions (cf. COSERIU 1964:151ff.). Accordingly, the minimal differences of meaning, e.g. *MALE* : *FEMALE*, etc., resulting from the oppositions in (5) are called semantic features, semantic components, or semes. They are usually represented by capitals in order to distinguish them from the homophonous object-linguistic lexemes, with which they must not be directly identified, although the relationship between semantic features and the object-linguistic lexical items serving as their names is by no means arbitrary⁷. Lexical meanings can thus be represented as sums of semantic features. Although this kind of analysis is by no means uncontroversial — in particular, the status of the semantic features is less than clear (cf. FODOR 1977:153ff., LYONS 1977:329ff.) —, it still seems to be superior to the alternative based on meaning postulates. For the latter it seems to be rather difficult to express the generalizations forming the topic of this paper.

4.2. Besides differences, oppositions like those in (5) also presuppose similarities in the elements opposed to each other. Thus *boy* and *girl* are characterized not only by the difference *MALE* vs. *FEMALE*, but also by a common residual meaning, which corresponds to the meaning of *child*. Therefore, these lexemes can also be defined as *male child* and *female child*, respectively. This can be represented as follows:



The area of meaning covered by *child* is divided into two areas by the opposition *MALE* : *FEMALE*, which correspond to the meanings of *boy*

⁷ For a discussion of this relationship in connection with the theoretical status of semantic features and their justification, cf. KASTOVSKY (1980: 4.4.4-5.).

and *girl*. But the semantic features resulting from this opposition themselves imply a common basis: they both refer to a category *SEX*, which they define more precisely. This basic category is quite appropriately called a «semantic dimension» by Coseriu, and defined as follows:

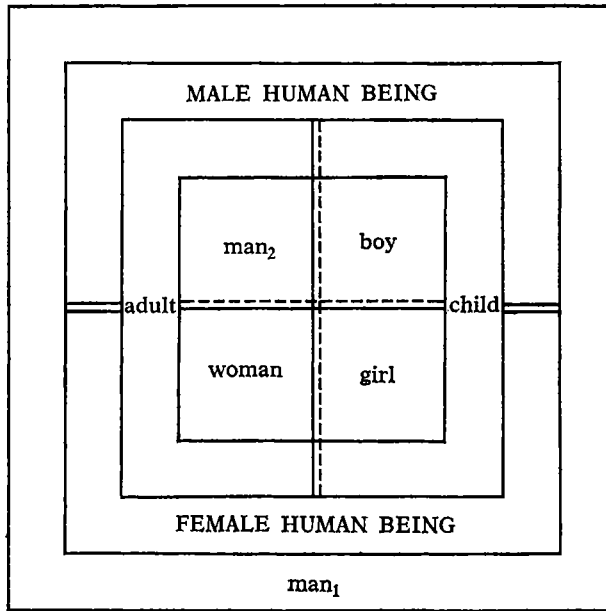
Une dimension, c'est le point de vue ou critère d'une opposition donnée quelconque ... la propriété sémantique visée par cette opposition, le contenu par rapport auquel elle s'établit et qui, du reste, n'existe — dans la langue respective — qu'en vertu, précisément, du fait qu'une opposition s'y rapporte, qu'il est le support implicite d'une distinction fonctionnelle. (COSERIU 1975: 35.)

4.3. The notion of «lexical field» now forms the natural complement and at the same time the basis for the concepts of «semantic feature» and «semantic dimension». These concepts are interdependent. Lexemes which among themselves subdivide a larger area of meaning form a lexical field. Obviously these lexemes must belong to the same part of speech, because otherwise they could not enter into minimal oppositions with each other. These minimal oppositions are based upon a semantic dimension and result in semantic features specifying the particular dimension.

For the sake of completeness it has to be mentioned that Coseriu recognizes two types of semantic features, *semes* and *classemes*, and, correspondingly, two types of lexical structures, viz. lexical fields and lexical classes. *Semes* are restricted in their occurrence to one lexical field, while *classemes* may appear in more than one field. The distinction is apparently quite similar to the one between semantic markers and distinguishers postulated in KATZ/FODOR (1963) and subject to the same objections (cf., e.g., BOLINGER 1965, WEINREICH 1966). It seems to be of a quantitative rather than a qualitative nature, relating to the functional load of the respective features and not to their function itself. Accordingly, I have not adopted this distinction here.

4.4. The pairs *boy* : *girl*, *man* : *woman*, respectively, thus constitute minimal lexical fields. The semantic features shared by all lexemes of a field, i.e. their intersection, represent the meaning of the field, which is called an «archiseme». This in turn may but need not be represented by a lexeme, which then functions as the name of the lexical field, as an «archilexeme». In the case of *boy* and *girl*, this is the archilexeme *child*; in the case of *man* and *woman*, it is the archilexeme *adult*. Between an archiseme/archilexeme and each lexeme of the respective lexical field there is a sense-relation called «hyponymy», i.e. *boy* and *girl* are both hyponyms (co-hyponyms) of *child*. One lexical field may contain another or several other fields. This results in hierarchies of varying depth with corresponding hierarchically related archilexemes. Moreover, lexical fields may intersect, cf.

(7)



In this example, the lexical fields characterized by *child*, *adult*, *MALE HUMAN BEING* and *FEMALE HUMAN BEING* intersect. They are all subfields of the overall lexical field characterized by *man₁*. We will therefore have to distinguish two different lexical items *man*, which correspond to the German lexemes *Mann* and *Mensch*, respectively. In other words, *man₂* is a hyponym of *man₁*.

4.5. Thus it is the semantic dimensions which are the decisive factor in this analysis determining the internal structure of the lexical fields. They result from the immediate oppositions between lexemes and are themselves specified in greater detail by the semantic features. In turn, the nature of the semantic features depends on the type of opposition and thus on the type of dimension underlying it, which can have various properties.

The examples discussed so far represent binary, contradictory oppositions characterized by the following implications:

- (8) a. This is a boy → This is not a girl.
 b. This is not a girl → This is a boy.

The opposition *boy* : *girl* constitutes a dimension *SEX*, and the features resulting from this opposition divide this dimension into two mutually exclusive areas without transition. They exhaust the dimension completely.

Therefore, one feature can also be regarded as the logical negation of the other as is obvious from the implications in (8). Thus the features *MALE* : *FEMALE* can be replaced by *MALE* : *NOT MALE*. This property at least partly defines the sense-relation of «complementarity» or «binary taxonomy» (LEECH 1974:106) characterizing the relationship between some co-hyponyms. Further examples are *married* : *single*, *alive* : *dead*, *bachelor* : *spinster*, *have* : *lack*, etc.

This, of course, is not the only type of opposition possible between co-hyponyms. Thus the opposition *big* : *small* constitutes a dimension *SIZE*. But for these adjectives, only one of the two implications in (9) is valid:

- (9) a. Our dog is big → Our dog is not small.
 b. Our dog is not small → Our dog is big.

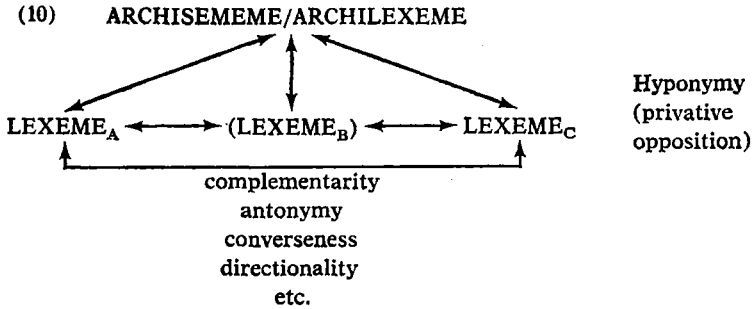
Here the dimension functions as a scale on which *big* and *small* mark opposite poles; between them there is a transitional area where a neither-nor statement is appropriate. Were it not for the fact that in predicating something as *big* or *small* a relation to some norm is implied, the meaning of these adjectives could be simply represented as \pm *SIZE*. In view of the relational character of these lexemes, however, a more complicated representation is required⁸. Basically, however, this constitutes a polar opposition characterizing the sense relation of «antonymy» (LYONS 1977: 279); GECKLER (1980) has recently suggested the term «antithetic opposition» in order to avoid the term «antonymy», since this is used ambiguously to denote both this type of sense-relation and oppositeness of meaning in general. Other examples are *high* : *low*, *genius* : *fool*, *love* : *hate*, etc.

Dimensions can also be characterized by multiple equipollent or gradual oppositions. Thus the scale of temperature-denoting adjectives (*hot* : *warm* : *tepid* : *cool* : *cold*) exemplifies a multiple gradual opposition, and the primary colour adjectives (*red* : *green* : *blue* : *yellow* ...) constitute an equipollent opposition. Moreover, lexical fields may be characterized by more than one dimension, which may intersect, as was the case in (7). A typology of the various possibilities can be found in COSERIU (1975) and LYONS (1977:270ff.).

4.6. Lexical fields are thus basically characterized by two types of relations: hierarchical and non-hierarchical ones. A hierarchical relation underlies the exclusively binary opposition between an archilexeme/archisememe and each of its hyponyms. This, moreover, is a privative opposition, since the hyponym will always contain one or several semantic features which are not present in the archilexeme. The various non-hierar-

⁸ Cf. KASTOVSKY (1981: 4.4.3. and 4.6.2.3.) for a summary of the problems involved in the representation of this type of sense relation.

chical oppositions characterize the relations among the hyponyms themselves. This can be represented by the following diagram:



(gradual, equipollent, contradictory, polar, etc., oppositions).

5.1. The most important observation in connection with the topic of this paper is that these relations have parallels in the domain of word-formation. As mentioned above, word-formation syntagmas are based on a determinant-determinatum relationship. This results from a general tendency «to see a thing identical with another already existing and at the same time different from it» (MARCHAND 1969:11). A certain phenomenon is categorized as something already known, e.g. a *spaceship* as a *ship*, but at the same time it is differentiated from it, because the identified object differs from the general category by an additional specification: a *spaceship* is not just any ship, but one having something to do with space. This specification may assume quite different forms, but it seems largely to follow the relations summarized in (10).

The identification-specification pattern can manifest itself in terms of an archilexeme-hyponym-relation. This is why *ship* and *steamship*, *sailing ship*, or *steamer*, *freighter*, *tanker*, etc. are related to each other as archilexeme and hyponyms. Together with *barque*, *frigate*, *schooner* and others they belong to the lexical field *SHIP*. The same applies to the relation between *write* and *rewrite*, *author* and *co-author*, *tell* and *foretell*. This archilexeme-hyponym-relationship is typical of the relationship between the determinatum and the word-formation syntagma as a whole in compounds; but it also applies to numerous prefixations and suffixations. In other cases, the relationship between base and word-formation syntagma is one of complementarity, as in *edible* : *inedible*, *transformable* : *intransformable*, *white* : *non-white*, *steward* : *stewardess*, *widow* : *widower*. Antonymy is also possible, cf. *kind* : *unkind*, *wise* : *unwise*, etc. Directional opposition, in analogy to *to open* : *to close*, occurs with reversative verbs of the type *tie* : *untie*, *militarize* : *demilitarize*, *join* : *disjoin*, etc. And it seems to be very often the case that word-formations are specifically found in those instances where there is no primary lexeme to represent the respective sense-relation. Obviously the semantic dimensions, which

characterize the internal structure of the lexical fields, are of prime importance for this parallelism and also for the overall organization of the vocabulary.

5.2. This interaction of semantic dimensions, primary, and secondary lexical items is corroborated by the following striking example discussed in another connection in LIPKA (1980). The verbs *kick*, *punch* and *slap* are hyponyms of an archilexeme *HIT*. Contrary to the latter, however, they imply a specific instrument by means of which the action is performed. The opposition between these verbs thus constitutes a dimension *INSTRUMENT*. Another dimension is based on the opposition between *bash*, *smack*, *pound*, *knock*, *beat*, etc., which also belong to this lexical field, but which are differentiated according to the *MANNER* in which the action is performed.

Kick and *punch* imply *foot* and *fist*, respectively, as instruments, and their meaning obviously functions as a semantic feature of the meaning of these verbs. This can be deduced from the following sentences, where (11a), (12a) are redundant, and (11b), (12b) are contradictory.

- (11) a. *Beckenbauer kicked the ball with his foot.
 b. *Ali punched Frazier on the nose with his fist.
- (12) a. *Beckenbauer kicked the ball with his head.
 b. *Ali punched Frazier on the nose with his palm.

Slap seems to imply a flat object as instrument, as is exemplified by the different degrees of acceptability of the following sentences, cf.

- (13)
- | | | |
|-----------------------------------|---|--|
| Harriet slapped Peter's face with | } | her hand
the back of her hand
her fan
a pan
*her fist
*a tennis ball
*a rolling pin. |
|-----------------------------------|---|--|

These examples are, by the way, instances of lexical solidarities. Obviously *kick*, *punch* and *slap* do not by any means exhaust the dimension *INSTRUMENT*; rather they represent only a small fraction of all the possible instruments which could be involved in the action of hitting. Thus one could without difficulty also imagine verbs having the meanings 'hit with the arm', 'hit with the shin', etc., except that there do not seem to be any lexical realizations for them so far⁹. They constitute «possible lexical items» in the sense of generative semantics, whose semantic structure is predetermined by the existence of this dimension within this lexical

⁹ at least not in this meaning; *to arm* and *to shim* do occur as lexical items, however, but with a different meaning.

field. Such gaps can easily be bridged by syntactic paraphrases. But if the speakers require a fixed, institutionalized expression, they usually have recourse to a word-formation syntagma. Thus the meanings 'hit with a hammer', 'hit with a club', 'hit with a cudgel', 'hit with a cosh', etc. are rendered by the corresponding denominal verbs *to hammer*, *to club*, *to cudgel*, *to cosh*. We thus get the following overall structure:

(14) HIT (archilexeme)

INSTRUMENT	MANNER	... Dimension
kick	bash	
punch	smack	
slap	pound	
hammer	beat	
club	...	
...	...	

5.3. This representation is probably extremely simplified, since presumably the dimensions *INSTRUMENT* and *MANNER* overlap, but it illustrates one very important point. The semantic dimensions and the type of opposition from which they result characterize the internal structure of the lexical fields; they are therefore of prime importance for the overall structure of the vocabulary, since they form the basis not only of actually realized, but also of theoretically possible oppositions within the vocabulary, and thus they specify the direction of potential word-formations. The following possibilities may be distinguished:

1) A dimension is completely exhausted by the opposition between primary lexemes, e.g. *SEX* and *boy* : *girl*, *stallion* : *mare*, *SIZE* and *big* : *small* etc.

2) A dimension is only partially exploited by primary lexemes, so that there are accidental gaps constituting «possible lexical items». These gaps can be filled either by syntactic paraphrases, or, especially if a fixed lexical expression, i.e. a name, is required, by corresponding word-formation syntagmas. This was illustrated above by the example *HIT* and *punch*, *kick*, *slap* vs. *hammer* vb, *cosh* vb, etc. with regard to the dimension *INSTRUMENT*.

3) A dimension exists in one part of a macrofield only, while it is neutralized in another part, cf. the opposition *ram* : *ewe* (*SEX*), which is neutralized in *lamb* as against *colt* : *filly* in the field *HORSE*.

4) A dimension is established in one field by the opposition between primary lexemes and is analogically transferred to another neighbouring field, where it is expressed by a secondary lexeme. This is the case with the dimension *SEX* in pairs such as *tiger* : *tigress*, *lion* : *lioness*, *he-goat* : *she-goat*, *steward* : *stewardess*, *usher* : *usherette* in analogy to *ox* : *cow*, *man* : *woman*, etc.

Thus the lexicon is obviously structured at the semantic level according to uniform principles; and in this respect the semantic dimensions play a decisive role. They provide a kind of matrix within the vocabulary into which word-formations are fitted as a kind of stopgap, thus contracting various sense-relations with primary lexemes. This is why the existence of a primary lexeme often, although not always, blocks the formation of an equivalent secondary lexeme by one of the productive word-formation patterns, cf, e.g. *thief* and **stealer*.

5.4. There is, however, another, even more important conclusion which suggests itself. The categories *INSTRUMENT* and *MANNER* are also relevant in syntax, i.e. they are by no means restricted to lexical structures. The Instrumental is one of the deep structure cases of Fillmoreian case grammar (cf. FILLMORE 1968); in other grammatical models this category is treated as an Adverbial just like the category Manner. Obviously, these are thus both semantic and syntactic categories. Moreover, the gaps provided by the semantic dimensions can be filled by syntactic paraphrases as well as by word-formations. All this permits only one conclusion: the semantic structures of these three kinds of unit —primary lexeme, word-formation syntagma and syntactic syntagma— must be organized according to the same principles. And this in fact corresponds precisely to a fundamental postulate set up by Weinreich, which led to the development of generative semantics, viz:

Every relation that may hold between components of a sentence also occurs among the components of a meaning of a dictionary entry [...] This is as much as to say that the semantic part of a dictionary entry is a sentence — more specifically, a deep-structure sentence (WEINREICH 1966:446).

But this is equivalent to claiming that the meanings of primary lexemes and of word-formation syntagmas possess an internal syntactic structure, which constitutes one of the central postulates of generative semantics. Thus, a suitable development of structural semantics based on a purely semantic point of view, and regarding the difference between primary and secondary lexemes as purely morphological and therefore of secondary importance, shows that structural and generative semantics are by no means incompatible, but rather complement each other as two facets of the same coin.

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