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From Polysemy to Semantic Change
Towards a typology of lexical semantic associations

Edited by

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From Polysemy to Semantic Change. Towards a typology of lexical semantic associations.
Edited by Martine Vanhove

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Around the eye*

Peter Koch
University of Tübingen

Using the methodology of diachronic cognitive onomasiology, as developed in two projects at Tübingen University, the study discusses polygenetic semantic parallels in semantic change, focusing on those that are due to fundamental cognitive constants. The cognitive and formal relations between a source and a target concept are identified through a two-dimensional grid. The approach is exemplified for the semantic domain of eye (eyelash, eyebrow, eyelid, and eyeball). The study provides a list of all the cognitive solutions to create lexical innovations chosen in the language sample. Together with cultural and linguistic categorization, it also explains the different options chosen by the languages for lexical conceptualization and gives insight to the ongoing debate on linguistic relativity.

Keywords: body parts; cognition; contiguity; frame; metaphor; metonymy; onomasiology; polygenesis; semantic change; semantic parallels; typology

1. Theoretical and methodological preliminaries

1.1 The search for semantic parallels

Cognitive semantics has not only given a fresh impetus to synchronic, but also to diachronic linguistics, in so far as cognitive approaches to the description of metaphor, metonymy, subjectification, etc. shed new light on well-known problems of semantic change (cf. Blank & Koch 1999). As Lakoff & Johnson (1980) and Traugott (cf. recently Traugott & Dasher 2002) have shown mainly for vocabulary, and as Heine & Kuteva (2002) have shown mainly for grammar, but in part also for vocabulary, certain paths of change are of particular interest, especially those which are followed again and again when it comes to semantic change in language, and which therefore seem to point

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*I would like to thank Martine Vanhove for her helpful suggestions as well as Sam Featherston for the stylistic revision of this paper.
to constant cognitive factors. Presumably these factors intervene in linguistic change like an invisible hand (in the sense of Keller 1994) and time and again produce similar results in a polygenetic fashion. If this were true, it would be much easier to predict lexical change (cf. Koch 1997; 2000: 75–81, 89–92; 2001a: 8–17, 25–31; 2003: 154–162, 2005a; Blank 2003).

My paper is intended to show how diachronic cognitive onomasiology proceeds in this domain and what insights it offers. From both a theoretical and a methodological point of view, it is first of all necessary to discuss several questions:

- What would the results have to look like if the term “polygenesis” is to be applied legitimately (see immediately below and 1.2)?
- Will our approach be semasiological or onomasiological (1.2)?
- On the basis of what kinds of data can our hypotheses be checked (1.3)?
- What is lexical change (1.4)?
- What kind of lexicological model are we to adopt (1.5) to account for a realistic conception of lexical change (1.4)?

When we began to study the designations of parts of the human body, we first established a project limited to Romance languages (DECOLAR)¹ and intended to analyse 14 languages or varieties in total in order to document the cognitive types present in the Romance area as completely as possible. Our second project, LexiTypeRom² is based on a worldwide sample of languages, and here, within the domain head, we describe designations of body parts with a different aim in mind: We check for semantic parallels in languages all over the world.

According to our hypothesis, semantic parallels between languages may be due to fundamental cognitive constants (a). However, it is obvious that semantic parallels may also be triggered either by genetic kinship of languages (b) or by linguistic and cultural contact (c). Especially in case (c), we suppose semantic parallels to show a significant areal distribution.

Since it is rather trivial to find semantic parallels in cognates belonging to genetically related languages (b), and since it is quite natural to find them in languages in contact (c), we have to radicalize our starting hypothesis: Semantic parallels arouse

1. The DECOLAR sample comprises the following Romance languages/language varieties/language states: Catalan, Engadine, Old French, Modern French, Friulian, Galician, Italian, Ladin, Occitan, Portuguese, Romanian, Sardinian (Campidanian), Sardinian (Logudorian), Spanish. For DECOLAR cf. Blank et al. (2000); Gevaudan et al. (2003).


3. Concepts are set in small caps here.


our interest only in so far as there is a chance of these having been triggered by cognitive constants and of being independent of linguistic kinship as well as of language contact. So we have to search for semantic parallels that are likely to be polygenetic in nature. In order to find this kind of results, we have to stick to a rigorous methodology, as described in 1.2–1.5.

1.2 Onomasiology

Our starting point has to be an onomasiological one. Onomasiology is like a sieve filtering out everything that corresponds to a pre-established criterion – the fact of designating a given concept – without our being able to manipulate the results. So we have to accept everything that is filtered out, whether it confirms our hypothesis or not.

Onomasiology has a second advantage: It enables us to discover material that is interesting independently of any etymological relationship. In this way, we can postulate a potentially polygenetic evolution even within one and the same language family:

(1) a. Late Lat. ciliwm eyelash < Lat. ciliwm eyelid
(hence the denominations for eyelash in many Romance languages: Fr. cil, it. ciglio, etc.; cf. Appendix I)

b. Occ. parpelha eyelash < Lat. palpebra eyelid

c. Rom. geană eyelash < Rom. geam eyelid

There is no etymological relation between the words Late Lat. ciliwm (1a), Occ. parpelha (1b), and Rom. geană (1c), taken from three – otherwise related – Romance languages. Prima fata, their only common denominator is the fact that they designate the concept eyelash.³ Making some provisional reservations (might there be a typical “Romance” cognitive pattern eyelash ← eyelid?), we can consider these examples as cases of polygenetic semantic change (if we will see in 3.2., these reservations will turn out to be unnecessary).

A further important advantage of our onomasiological approach is its conformity with the innovating speaker’s perspective (inasmuch as speakers innovate).⁴ Speakers do not intend to change the vocabulary of their language (cf. Coseriu 1958: 112, 116f., 127f.; Keller 1994: 246f., 112f.). They sometimes just innovate using a trope that makes communication more efficient, that improves their personal image, etc. (only in some cases will this innovation afterwards be adopted by the speech community). Speakers use innovating tropes to designate a particular concept, not to change the
meaning of a word (cf. Koch & Oesterreicher 1996: 77f; Koch 2001a: 8–11). So the motivation behind speaker-induced innovation is to express something and not to give an expression a different interpretation (even though the expression concerned actually undergoes a different interpretation). Consequently, the linguist who adopts the onomasiological perspective and asks him- or herself from which cognitive source a given lexical innovation was taken, puts him- or herself exactly in the innovating speaker’s place.

1.3 Language samples

A second important aspect of our methodology is the reference to a pre-established sample of languages. The adequacy of the sample depends on the specific aims of a given project.

In the DECOLAR project, as I have already noted, we want to document the cognitive types present in our Romance sample (in the following: "rom"; cf. n. 1) as completely as possible. Here, then, the focus is on diversity. If we discover potential polygenetic material, as exemplified by the examples in (1), so much the better, but we have to check it against the material of the LexiTypeRom project.

In this latter project, we try to guarantee a worldwide distribution corresponding to typological criteria. There are certainly some limitations due to the need to find sufficient lexicographical documentation including etymological or at least comparative data. So a certain European bias is nearly inevitable, but as will be seen later on, we are trying to reduce it to a minimum. The worldwide sample has not yet been totally evaluated. So the results I am going to present in sections 2 to 4. are based on a more limited and somewhat differently designed sample used in Mihatsch (2005) and comprising 24 languages worldwide (in the following "ww").

1.4 Change of designation and types of lexical change


In our first example (Fig. 1), the dotted lines represent the fact that the lexical item Vulg.Lat. *carrella*, which meant *cart*, became OSp. *carrillo* meaning *jaw*. This is

---

5. The "ww" sample, as used in Mihatsch (2005), comprises the following languages: Albanian, Basque (Indonesian), Bambara, Chinese (Mandarin), English, Estonian, Gaelic (Scottish), German, Hausa, Hopi, Hungarian, Japanese, Lahu, Nahuatl (Azteco-Mexicanan), Népal, Quechua (Highland Chimborazo), Russian, Sotho (Northern), Swahili, Swedish, Tamil, Tibetan, Twilal, Yir Yoront.

6. The labelling of L and C is, in principle, arbitrary, but it is not undesirable that C, may be read as "source concept" and C, as "target concept."

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the semasiological description of a lexical change focussing on meaning change with respect to the lexical item L,:

![Figure 1. Change of designation and change of meaning.](image)

The change in meaning described went hand in hand with another one (represented by the solid lines in Figure 1) that only an onomasiological perspective reveals: The concept jaw (C) was expressed by maxilla (L), in Latin and by carrillo (L) in Old Spanish. This is the description of a change of designation with respect to the target concept jaw (C).

Every meaning change is necessarily accompanied by a change of designation, but the opposite does not hold – a fact we can only grasp from an onomasiological perspective. As shown in Figure 2, in another part of the Romance area there is still another change of designation that has taken place with respect to the target concept jaw (C): OFr. *mascelle* (L), taken over from Lat. *maxilla*, was replaced by OFr. *maschoire* > ModFr. *maschoire* (L), which was derived from the verb *mascher* "to chew" (L').

So, in this case too, we have a target concept C (jaw) and a source concept C (to chew). However, the lexical process leading us from the source concept to the target concept is not a change of meaning, but a process of word-formation (suffixation). More generally speaking, we can then say that a change of designation involving a target concept C, and a source concept C can come about in very different ways with regard to the formal properties involved:

- by changing C, the meaning of a formally identical lexical item (L") that originally expresses C, (see Figure 1);
- by forming a new lexical item L’ - expressing C, - via a process of word-formation based on a lexical item L, expressing C, (see Figure 2, displaying a case of
suffixed; obviously, other types of word-formation, such as prefixation, composition, etc. are used for the same purpose:

- by forming a new lexical item \( I_n \) expressing \( C_n \) via a process of conversion, i.e., change in word class, based on a lexical item \( I_0 \) expressing \( C_0 \) (see below example (2)); conversion may even be considered as a border-line case of word-formation);

- by forming a new lexical item \( I_n \) expressing \( C_n \) via a process of number change based on a lexical item \( I_0 \) expressing \( C_0 \) (see below example (3); this is definitely different from plain word-formation);

- by forming a new lexical item \( I_n \) expressing \( C_n \) via a process of gender change based on a lexical item \( I_0 \) expressing \( C_0 \) (see below example (4); this is different from plain word-formation as well); etc.

(2) \( C_n = \text{backside of a person} \):
\[
I_{n} = \text{L. pollex} \\
I_{0} = \text{L. (il) sedere (noun)} \\
C_{n} = \text{to sit}
\]

(3) \( C_n = \text{back}:
\[
I_{n} = \text{L. dorsum (pl.)} \\
I_{0} = \text{Port. costa} (\text{sg.}) \\
C_{n} = \text{rib}
\]

1.5 A two-dimensional lexicological approach
The considerations in section 1.4. enable us to recognize two dimensions of lexicological description. Firstly, we have to identify the cognitive relation \( R^2 \) between the target concept \( C_n \), e.g., jaw in Figure 2, and the source concept \( C_0 \) (to chew, in our example). Since the jaw is a body part whose purpose it is to chew, we can speak of a relation of contiguity. Secondly, we have to specify the formal relation \( R_1 \) between the target expression \( I_n \) (maschoire in Figure 2) and the source expression \( I_0 \) (maschier). In this case, there is a derivational relation of suffixation. So we always have to identify these two dimensions, the cognitive one and the formal one.

In example (2), the cognitive relation between the target concept \( C_n \) (backside of a person) and the source concept \( C_0 \) (to sit) is contiguity as well, because people sit on their backside. The formal relation is conversion.

In example (3), the cognitive relation between the target concept \( C_n \) (back) and the source concept \( C_0 \) (rib) is once more contiguity, because the posterior portion of the ribs is part of the back. The formal relation is number change.

In example (4), the cognitive relation is taxonomic subordination between the target concept \( C_n \) (great toes) and the source concept \( C_0 \) (toe), since great toe \( C_n \) is a special case of toe \( C_0 \). The formal relation is gender change.

In the case of Figure 1, the cognitive relation between the target concept \( C_n \) (jaw) and the source concept \( C_0 \) (cart) is one of metaphorical similarity (in a very expressive metaphor, the jaw is seen as a (strong) vehicle). On the formal level, we get the particular constellation of \( I_n \) being identical to \( I_0 \) (i.e., formal identity despite the change of meaning). That is why \( I_n \) is lacking in Figure 1.


7. I shall just mention a possible third ("stratificational") dimension of this lexicographical model, where the "stratum" is opposed to borrowings - a very important distinction for diachronic lexicology (cf. Blanks 1995; Koch 2000: 84, 88f; 2001b: 21f, 25; Gévaudan 2003, 2007: 34-38, 141-163, 177-185; Græve 2004a: 136-150). Thinking of things such as loan translations, loan blends, and, in general, any kind of calque, we easily understand that "borrowing" is not a simple
appearing in Figure 2 (viz. 01, 02, etc., 10, 11, etc., 21, 22 etc.) are purely arbitrary and only serve as a means of identifying the different squares in the table.

<table>
<thead>
<tr>
<th>formal identity</th>
<th>conceptual identity</th>
<th>contiguity</th>
<th>metaphoric</th>
<th>cotoxonomic similarity</th>
<th>taxonomic superordination</th>
<th>taxonomic subordination</th>
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<tr>
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<td>05</td>
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<td>62</td>
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<td>94</td>
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</tr>
</tbody>
</table>

Figure 3. A two-dimensional grid for diachronic lexicology.

On the one hand (horizontal axis of Figure 3) we have a universal and language-independent closed inventory of cognitive relations (R') based on the fundamental associative relations of contiguity (α) and similarity (β). Additional category, but that there must be the possibility of multiplying a whole stratificational dimension by the categories of the two-dimensional grid presented in Figure 3. But this is not our concern here, because, as I have already said in 1.1., language contact brings about borrowings rather rules out the probability of polygenetic developments in the lexicon.

8. This is a closed inventory, even though it is not represented completely in Figure 3. I have omitted everything concerning the relation of contrast (the logical counterpart of similarity, as for example in HART-BODY), because it is not present in the material analysed in this article. For further details, cf. Blank (1997a: 220–229, 2000: 60).

- identity as an extreme case of similarity (β).
- contiguity (α), i.e., the relationship between frames and their elements, e.g., vein-blood or between two or more elements of the same frame, e.g., backside-to-sit.9
- cotoxonomic similarity as the type of similarity (β) which connects concepts of the same hierarchical level within a taxonomy, e.g., thumb-ring finger.
- taxonomic superordination as for example thumb-finger or ring finger-finger. The taxonomically superordinate concept emphasizes the similarity (β) between subordinate concepts at the expense of at least some of the contiguities (α) specific to them (part-whole relationships, properties, etc.).

On the other hand (vertical axis of Figure 3) we have an open inventory of formal relations (R) corresponding to different lexical devices according to the typological make-up of different languages of the world: formal identity, tone change, reduplication, number change, gender change, voice change, conversion, suffixation, prefication, blend, morphological composition, serial verbs, syntagmatic composition, idioms, etc.

Thus, our example in Figure 1 (OSP. cardillo) corresponds to the type 02, because it displays a metaphorical similarity cart-jaw alongside with formal identity. Our example in Figure 2 (OFR. maschien) corresponds to the type 71, because it is based on a contiguity relation to chew-jaw alongside with suffixation. It. se dele (2) is an example of type 61 combining a contiguity relation to sit-backside with conversion. Port. costas (3) is type 31 (contiguity re-back and number change) and Gal. deda (4) type 45 (taxonomic subordination toe–great toe and gender change).

From the cognitive point of view, the advantage of this approach lies in the fact that it reveals cognitive constants across languages even in cases where there is a complete diversity on the level of the formal devices.10

(5) a. Hopi pun’wep’i(l) Eyebrow
   -contiguity: formal identity < Hopi pun’wep’i(l) Eyebrow

b. Lat. supercilium (-a) Eyebrow
   -contiguity: morphological composition < Lat. cillum Eyebrow
   (+ super: above)
   (hence the denominations for Eyebrow in many Romance languages:
    Fr. sourcil, it. sopracciglio, etc., cf. Appendix III)

c. Rom. sprinccan Eyebrow
   -contiguity: blend < Rom. geanî < Lat. geani Eyebrow
   (x Lat. supercilium Eyebrow: cf. (5b))

The examples in (5) show three completely different formal devices producing lexical items that express the concept Eyebrow: formal identity, i.e., meaning change in (5a), a kind of morphological composition in (5b), and a blend in (5c). Nevertheless, in all these cases, there is one underlying cognitive constant: the contiguity relation between Eyebrow and Eyebid. And this is what we are interested in when we compare diachronic processes in the vocabulary of different languages.

2. A look at the data

2.1 A first exemplification: The target concept Eyelash

Since those body parts that raise problems of conceptualisation and whose denominations are often less stable seem particularly interesting, I have chosen concepts that are a little bit different from the body part concepts studied in general: Eyelash, Eyebid, Eyebrow, and Eyeball.11

Our onomasiological starting point and the fact that our analysis is based on a language sample imply that we have to accept everything that is filtered out by our

10. Within the bracket format <x5.5x5>: the cognitive relation between the target concept (C_j) and the source concept (C_i) is in the first position, and the formal relation between the corresponding lexical items (l_j and l_i) is in second position ("zero" indicating a case of meaning change, i.e., l_j = l_i). For this bracket format, cf. Koch (2000: 85-89; 2001a: 22-25); Gévauden et al. (2003: 7f.); Gévauden (2003; 2007: 63-67).

11. For comparative and/or diachronic semantics of body-part terminology, cf. Brown (1976); Andersen (1978); Matisoff (1978); Wilkins (1996).

"view", be it welcome or not. This is a salutary principle, since it prevents us from too rash generalisations. If we actually discover polygenetic parallels under these circumstances, they are all the more significant; if not, we have to accept this.

Appendix I contains the data for the target concept (C_j) Eyelash that will be our starting point. They are based on the one hand on the Romance sample "rom" characterized in 1.3. and in n. 1. on the other hand on the somewhat provisional worldwide sample "ww" described in 1.3. and in n. 5. For the time being, we keep those two samples separate, even though it would be legitimate to integrate the data of at least one Romance language into the "ww" sample.

Apart from one case of apparent stability in some Romance languages (Catalan, Galician, Portuguese, and Spanish),12 we find different types of designation, i.e., different triples R' (C_i, C_j). A very important type corresponds to the source concept (C_i) hair, as exemplified by Bahasa Indonesia:

(6) Bahasa Indonesia bulu mata Eyelash
   -taxonomic subordination: morphological composition:
   bulu Hair (+ mata Eye)

The head of the composition (bulu, in this case) conceptualizes Eyelash through a taxonomic subordination to Hair (as for the modifier mata, see 3.1., (6')).

13. This type of taxonomic subordination to Hair is polygenetically represented. We have two attestations in the "rom" sample (Engadinan and Occitan14) and 11 attestations in the "ww" sample (Bahasa Indonesia, Bambara, Chinese, Hausa, Hopi, Japanese, Lahu, Nahuati, Swedish, Tamil, Tzeltal).

Another polygenetic type is exemplified by Russian:

(7) Russ. resinca Eyelash
   -metaphorical similarity: x5 > cognates: CATKIN (comparative data)

This is an interesting case from a methodological point of view. For many languages, the "depth" of accessible diachronic evidence is not sufficient to establish relevant

12. The lexical items in question are Cat. pestanya, Sp. pestanca, Gal. pestana, Porr. pestana, pointing back to a (reconstructed) VulgLat. "pestana" (eyelash) of uncertain etymology.

13. Obviously, all the binary lexical devices, such as (morphological or syntagmatic) composition, serial verbs, idioms etc. relate the target concept (C_j) at the same time to two source concepts (C_i); see 3.1.

14. Unlike all the other languages cited here, Occitan does not recur to a composition, but uses the word petisson that originally means little Hair. Nevertheless, the cognitive procedure of taxonomic subordination is the same as in the other languages.
diachronic filiations. In these cases, etymological dictionaries display reconstructed forms with reconstructed (proto-)meanings. Now, it has been shown that proto-meanings of this kind do not represent epistemologically legitimate "data" of a diachronic cognitive onomasiology; all the more if one wants to draw farther-reaching conclusions regarding polygenesis (cf. Koch & Steinkrüger 2001: 537–541; Koch 2003: 164–166; 2004a: 84–96). But even in these cases, we do not have to abandon the idea of cognitive onomasiology. The analysis simply has to be based not on a diachronic filiation, but on synchronic comparative data. Thanks to the repertoire of cognitive relations (cf. 1.5. and Figure 3), we are always able to establish semantically interesting and relevant connections between the meanings of cognates, which are the synchronic result of diachronic lexical processes in related languages and thereby ultimately reflect the cognitive relations involved. As example (7) shows, this does not only apply to languages without any written tradition, but also, for instance, to Indo-European languages, insofar as non-documented portions of their diachrony are concerned (Proto-Slavonic or Proto-Indo-European, in the present case).

Even though the notation has to be a little bit different in the case of comparative data, the relevant cognitive relation that holds between the two concepts involved emerges clearly from a comparative datum and makes the diachronic and the comparative material commensurable to a certain extent. In example (7), we have a metaphorical similarity between the concept eyelash and the concept catkin. This comparative datum can be related to a more general metaphorical model, realized in diachronic data of various languages, that is based on the similarity between eyelash and s.th. hairy: Panicle (Estonian at an earlier stage: see n. 20), wool (Quechua), burnt end of a wick (Swahili), and wing/feather (Tibetan). All in all, then, this metaphorical model is polygenetically attested in the diachronic or comparative data of 5 languages of the "ww" sample (4 languages without the earlier stage of Estonian).

A third relatively important polygenetic type is exemplified by Swedish:

(8) Swed. ägofrans eyelash
<metaphorical similarity, morphological composition>
frans fringe (+ öga eye)

The head of the composition (frans, in this case) conceptualizes eyelash through a metaphorical similarity to fringe (as for the modifier öga, see 3.1., (8')). In a broad sense, this type is attested four times in the "ww" sample (Swedish = (8); Engl. eyelash:

head = flexible part of a whip; Sotho nšiši brink of a river, shore edge, Nepali purīl with cognates meaning pencil, sheath).

We neglect for the moment the remaining parts of Appendix I and especially the details of the contiguity-based solutions (cf. 3.2.) in order to discuss here and now what we can realistically expect from our data. There will never be one overall solution, but if we get different solutions that are attested polygenetically in more than one language, this is already a good result (cf. also Mihatsch & Dvořák 2004).

In the Romance languages, where we get an overall picture of a language family, we discern the possibility of conceptually identical solutions in several languages that are nevertheless based on the same etymology. In these cases, it would be misleading to count separately every occurrence of the identical conceptual solution based on the same etymology. This is the reason why it is counted only once, and this is indicated by a sign of equality between the names of two or more Romance languages. Thus, the indication "Galician=Occitan" in the "contiguity" portion of Appendix I (Romance languages column) points to the following facts:

(9) a. Gal. perjēba eyelash
<contiguity zero> LateLat. poliptera eyelid

b. Occ. parpella eyelash
<contiguity zero> LateLat. poliptera eyelid

cf. (1b)

In contrast to this, disconnected (blocks of) Romance language names appearing in the same field of Appendix I correspond to intra-Romance cognitive parallels on the basis of different etymons, as exemplified in (1).

All in all, we observe that the Romance languages are "well integrated" into the general picture that emerges from the "ww" sample, since - apart from one case of apparent stability (s. above and n. 12) - they adopt not all, but some of the solutions that are present in the "ww" sample.

2.2 Extending the analysis: The concepts eyelid, eyebrow, and eyelid

As already announced at the beginning of section 2., the other three target concepts we want to include in this overview are eyelid, eyebrow, and eyelid (Appendices II-IV). We find roughly the same general picture as for the concept eyelash (though with some little peculiarities in Romance for eyelid and eyebrow; but we will not go into these idiosyncratic details here).

As for the concepts eyelid and eyebrow (Appendices II-III), the situation resembles very much what we saw in the case of eyelash. Among the different taxonomic, metaphorical and contiguity-based solutions, there are at least two that are well represented in a variety of languages distant enough to admit an interpretation in terms of polygenesis: taxonomic subordination to skin, flesh for eyelid (cf. examples 15, 16, and 17), metaphorical similarity with veil, wrapper, lid for eyelid (cf. the comment

15. In order to express the non-directional comparative relations involved, the diachronically intended notation explained in n.10 is replaced by a symmetrical bracket format <x>, where the indication of formal relations is lacking, because these may vary between cognates in different languages.
on Eng. lid in example 20), taxonomic subordination to hair for eyebrow (cf. example 14), metaphorical similarity with fringe, line, edge for eyebrow (cf. examples 8 and 10), etc.

(10) Scoti. Gaelic *meas* eyebrow

<metaphorical similarity, morphological composition: meas ball (+ me eye)

The target concept eyeball presents an even more uniform picture. Even if there are different conceptual solutions as well, they overwhelmingly recur to metaphors that exploit the very salient roundness of this body part, as for example the following:

(11) a. Jap. *me-damai* eyeball

<metaphorical similarity, morphological composition: damai ball (+ me eye)

b. Quechua *inula* inula eyeball

<metaphorical similarity, morphological composition: inula egg (+ inula eye)

We will come back to this issue in section 4.

3. Refining the analysis

3.1 Dependent and independent conceptualisation

With respect to a relatively well delimited and profiled conceptual domain as the human body, there are logically two types of conceptualisation that can be activated to denote the concepts corresponding to its parts: we can distinguish dependent and independent conceptualisation.

Dependent conceptualisation of body parts involves other body parts either via contiguity or via taxonomic relations (mainly taxonomic subordination).

As for contiguity, we may think here of Wilkins’ “intra-domain metonymies” (1996: 274). In this sense, any of the examples (1a–c), (5a), and (9a, b) illustrates dependent conceptualisation via intra-domain metonymy. But thanks to the formal dimension of our two-dimensional lexico-logical grid (Figure 3), we are able to widen the range of contiguity-based procedures of dependent conceptualisation. We can include additionally, for instance, cases of number change like (3) or of blend like (5c), and we have to take into account in particular cases of composition. Formally speaking, a morphological or syntagmatic compound consists of a head displaying the grammatical properties of the whole compound and a modifier. The compound expresses a target concept C₂, whereas the head and the modifier express two source concepts, C₁ and C₃ respectively. Cognitively speaking, the relations connecting C₁ with C₃ may be of different kinds, and the same for C₁ and C₄. Thus, our example (6)

Bahasa Indonesia *bula mata* that we take up here, displays a relation of taxonomic subordination for C₁ – C₄ (eyelash is a kind of hair) and a relation of contiguity for C₁ – C₅ (eyelash belongs to the frame eye):

(6) Bahasa Indonesia *bula mata* eyelash (= C₅)

<taxonomic subordination, morphological composition: bula hair (= C₄)

<contiguity, morphological composition: mata eye (= C₅)

With respect to contiguity, Indonesian *bula mata* is a case of dependent conceptualisation inasmuch as its modifier mata spells out the frame (eye = C₅) to which the target concept C₅ belongs.

As for dependent conceptualisation via taxonomic subordination, a case in point is example (4), where C₁ = great toe is related to C₅ = toe (formally realized by gender change). In order to include composition as well, we may cite once more (6)'.

As already described in section 2.1., the head of the compound, bula, spells out the taxonomic subordination to hair. Since the latter is a body-part concept, this is a case of dependent conceptualisation, too. So then, Indonesian *bula mata* displays even double dependency of conceptualisation.

Independent conceptualisation corresponds, in short, to all other types of conceptualisation, i.e. those that are not based on contiguity nor on taxonomic relations and/or those that do not involve other body parts. Accordingly, examples (2) and (7) are cases of independent conceptualisation, as related to concepts outside the human body (to sit or eat in respectively), albeit via contiguity in the case of (2). As for composition, we can take up our example (8).

Swed. *ågofrans* based on a relation of metaphorical similarity for C₁ – C₄ (eyelash is like a fringe) and on a relation of contiguity for C₁ – C₅ (eyelash belongs to the frame eye):

(8) Swed. *ågofrans* eyelash (= C₅)

<metaphorical similarity, morphological composition: frans fringe (= C₄)

<contiguity, morphological composition: ågo eye (= C₅)

This is dependent conceptualisation as for the modifier ågo – exactly like in (6)’ –, but it is independent conceptualisation with respect to the head frans, which neither involves another body part nor is based on contiguity nor on taxonomic relations.

The data collected from our samples clearly demonstrate that the overwhelming majority of denotations for the four concepts we deal with here are based at least in part on dependent conceptualisation. As we will see more in detail in 3.2., a first type of dependent conceptualisation consists in shifts within the frame eye. Another solution that underlines the conceptual dependency upon the
frame eye concerns especially compounds whose modifier – not explicitly analyzed in the appendices – expresses a contiguity to the concept eye (6', 8', 11a, 11b, 14, 16, 17), but the modifier may bring into play also one particular part of this frame, as e.g., eyelid for eyelash (12). The languages concerned are marked by * in the appendices.

(12) Tamil kann-inai mayir eyelash (= C4)
   <taxonomic subordination.morphological composition< mayir hair (= C14)
   <contiguity.morphological composition< kann-inai eyelid (= C32)

So the concepts under consideration here are largely considered as parts of the conceptual frame eye (via contiguity to the frame as a whole or to one of its parts).

A further type of conceptual dependency, often overlapping with the preceding, is represented by derivatives or compounds whose head involves taxonomic subordination to concepts like hair for eyelash (6', 12, 13) or eyebrow (14), skin/flesh for eyelid (15, 16, 17) etc. (languages displaying this type of dependent conceptualisation are marked by * in Appendices I-IV). This is well attested in our sample:

(13) Occ. pelisson eyelash
   <taxonomic subordination.suffixation< pel hair

(14) Yir Yoront mel-thorchn eyebrow (= C4)
   <taxonomic subordination.morphological composition< thorchn hair (= C14)
   <contiguity.morphological composition< mel eye (= C32)

(15) Occ. pelona eyelid
   <taxonomic subordination.suffixation< pel skin

(16) Tibet. mig sa eyelid (= C4)
   <taxonomic subordination.morphological composition< sa flesh (= C34)
   <contiguity.morphological composition< mig eye (= C32)

(17) Tzeltal s-nukkuel stitl eyelid (= C4)
   <taxonomic subordination.syntagmatic composition< nukkuel skin (= C34)
   <contiguity.syntagmatic composition< stitl eye (= C32)

All in all, the – sometimes double – conceptual (and perceptual) dependency of the four concepts under consideration seems to be a cognitive constant.

3.2 Typical shifts within the frame eye

There is an interesting problem with the target concepts eyelash, eyelid, and eyebrow: Nearly every language has a denomination for these concepts, but the concepts themselves do not seem to be very salient. According to observations on several languages and dialects by different linguists (and according to my personal experience as well), speakers sometimes hesitate or get confused, when they have to denominate one of these concepts, even when speaking their mother tongue. Consequently, “confusions” of denomination are not very surprising in this domain. In fact, the lower parts of the Tables in Appendices I-III document some – sometimes reciprocal – conceptual solutions that involve one of the other three concepts under consideration here. We have already noted these shifts as one type of dependent conceptualisation in section 3.1. The shifts occurring in our samples can be summarized like in figure 4 (p.124) (the direction of the arrows represents the directions of shift attested; every pair of arrows is labelled with the relevant cognitive relation).

As some of these shifts are exemplified in (1), (5), and (9a,b), I will confine myself here to examples that illustrate the remaining shifts (the number of each example appears as a label at the appropriate place in Figure 4):

(18) a. Tibet. mig spu eyelash
   <cotaxonomic similarity.formal identity< mig spu eyebrow

b. Swahili ukope eyelash <contiguity.formal identity< ukope eyelash
c. Sard. pilbrista eyelid <contiguity.formal identity< pilbrista eyebrow
d. Tibet. rdzi malksi mo eyebrow
   <cotaxonomic similarity.formal identity< rdzi malksi mo eyelash
   (a synonym of the target item in (18a))
e. (Northern) Sotho thaka ya lehl/B eyelid
   <contiguity.formal identity< thaka ya lehl/B eyebrow

17. Within the “ww” sample, there is one language, Yir Yoront, that seems to lack a word for eyelash. Needless to say that the four concepts under examination (eyelash, eyelid, eyebrow, and eyelid) (and even eyelid), although well represented in our language sample, are not necessarily universal. They are of course lacking in Wierzbicka’s 55- (or 56- ) item list of semantic primes, excluding even the more fundamental frame concept eye (cf. Wierzbicka 1996: 115; Goddard 2001b: 1192). Note however that at least eye(s) is considered as a relatively simple concept with respect to its derivation from semantic primes (cf. Wierzbicka 1996: 218) and that it figures on the list of 101 potentially universal “meanings” discussed in a critical survey by Goddard (2001a: 9, 16f.).

Figure 4. Qualitative overview over types of shifts of denominations around the eye.

\[ f_1 \quad \text{(Northern) Sotho} \text{ } ntši爱好 eyelash} \\
\text{contiguity; formal identity: } ntši eyelid \]

\[ f_2 \quad \text{(Northern) Sotho} \text{ } ntši eyelid} \\
\text{contiguity; formal identity: } ntši eyebrow \]

\[ f_3 \quad \text{(Northern) Sotho} \text{ } ntši eyebrow} \\
\text{cotaxonomic similarity; formal identity: } ntši eyelash \]

[Sotho ntši meaning additionally, and perhaps originally, \textit{brine of a river, shore, edge}] (18f, to 18f, all comparative data in polysemy)

As shown by these examples, the main cognitive relation triggering these shifts is contiguity (1, 5, 9, 18b, 18c, 18e, 18f). The local "neighbourhood" within the frame eye provides speakers with a means of denomination where they are uncertain. It is only in the case of eyelash – eyebrow that cotaxonomic similarity seems to be more salient (18a, 18d, 18f). Both body parts similarly constitute a kind of hair, while there is no immediate "neighbourhood". But as the concepts eyelash and eyebrow nevertheless belong to the same frame eye, their (loose) contiguity may also have a role to play here. In several cases, we also have a triple linking between eyelash, eyelid, and eyebrow, as illustrated for synchronic polysemy by examples (18f).

The shifts represented in Figure 4 have a considerable impact on the lexical data of the two samples that can be quantified as follows:

Table 1. Quantitative overview over types of shifts of denominations around the eye

<table>
<thead>
<tr>
<th>Target concept (C_t)</th>
<th>Source concept (C_s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyelash</td>
<td>Eyelid</td>
</tr>
<tr>
<td>Eyelash</td>
<td>3 ww, 3 rom</td>
</tr>
<tr>
<td>Eyelid</td>
<td>2 ww = 2 ww</td>
</tr>
<tr>
<td>Eyebrow</td>
<td>3 ww, 1 rom</td>
</tr>
</tbody>
</table>

The polygenetic frequency of the shifts between eyelash, eyelid and/or eyebrow is due to a fundamental cognitive fact: the relatively low degree of salience of these interwoven concepts. The concept eyebrow, occurring only as a source concept in this context, and only with respect to eyelid – stands rather apart as being considerably more salient.

3.3 Redundant compounds

Another phenomenon that seems to be related to problems of salience concerns the cognitive, and at the same time, formal make-up of compounds figuring as denominations in the domain under consideration. Everywhere in our sample, there are examples of the two types of compound illustrated in (6') and (8'):

\[ (6') \text{ head: } C_{t1} \text{ based on taxonomic subordination (Indon. bulu hair) modifier: } C_{s1} \text{ based on contiguity (Indon. mata eye) }\]

\[ (8') \text{ head: } C_{t1} \text{ based on metaphorical similarity (Swed. frans fringe) modifier: } C_{s1} \text{ based on contiguity (Swed. öga eye) }\]

Cross-linguistically, these are two of the most common cognitive types of composition (cf. Blank 1997b; Gévaudan 1999: 18–20). Now let us consider the following example:

\[ (19) \text{ Est. } siharriperse eyelash (= } C_t \text{) identity; morphological composition: } riperse eyelash (= } C_s \text{) contiguity; morphological composition: } silema eye (= } C_{s2} \text{) }\]

In this case, the contiguity relation introduced by the modifier surprisingly concurs with an identity relation represented by the head (cf. Gévaudan 1999: 26ff.; Mihatsch 2006: 85). From the strictly logical point of view, these are "redundant compounds", since the head is conceptually identical to the whole compound and the modifier simply explicates frame knowledge already inherent in the head (one of the cases of dependent

---

19. "1 ww" means "1 attestation in the "ww" sample"; etc. "1 rom" means "1 attestation in the "rom" sample"; etc. "=" indicates attestations of reciprocal shifts/identical denominations between the three concepts eyelash, eyelid, and eyebrow.

20. At an earlier stage Est. riperse meant PANICLE (cf. 2.1. and Appendix I).
conceptualisation explained in 3.1.). Surely, in some cases redundant compounds may serve to remedy homonymy or polysemy:

(20)  
Engl. *eyelid* eyelid (= C₄)  
<identity: morphological composition: *lid* eyelid (= C₃)  
<contiguity: morphological composition: *eye* eye (= C₂)

Engl. *lid* having survived in its non-metaphorical, central sense "that which covers an opening", a clear distinction between the two senses of this (polysemous? homonymous?) word is desirable.

But even if the denomination of one of these concepts is totally isolated in synchrony, as for instance Germ. *Braue* (that nowadays simply has no other sense than *eyebrow*), we observe redundant compounds:

(21)  
Germ. Augenbraue *eyebrow* (= C₄)  
<identity: morphological composition: *Braue* eyebrow (= C₃)  
<contiguity: morphological composition: *Aug* eye (= C₂)

So the reaction to these "accidents" of polysemy, homonymy or lexical isolation are only a by-product of a more general problem with the concepts *eyelash*, *eyelid* and *eyebrow*. Their relatively low degree of salience produces a to-and-fro of demotivation and remotivation. Their denominations, be they of metaphorical or of a different origin, tend to become opaque with respect to their metaphorical — or whatever — conceptual origin as well as to the concept *eye*. The conceptual access will then be facilitated anew by a redundant compound that remotivates the denomination by spelling out the frame involved, i.e., *eye*.

The high degree of salience of the concept *eyeball*, by way of contrast, nearly everywhere stimulates vivid metaphorical creations (cf. section 2.2.) that remain strongly motivated and therefore have to be (re)settled, through non-redundant compounds, in the frame *eye* in order to avoid confusion with the still perceptible literal meaning of the metaphorized word:

(11b')  
Quechua *nakai bulu* eyeball  
<metaphorical similarity: morphological composition: *bulu* egg  
<contiguity: morphological composition: *nakai* eye

—

21 The case of Engl. *eyebrow*, though being similar from the point of view of word-formation (not on etymological grounds: cf. OED, s.v. *brow*), is different from Germ. *Augenbraue*, because *brow* has developed additional senses (especially "forehead", which in the meantime has even overridden the old sense "eyebrow"). So there has been the problem of distinguishing different — old or new — senses, just like with Engl. *eyelid*. But all these details are secondary with respect to the problem of conceptual salience that will be discussed in the following.

These reflections underline the fact that the difference in salience between *eyeball* on the one hand and *eyelash*, *eyelid* and/or *eyebrow* on the other is decisive. In fact, the denomination of the much more salient concept *eyeball* is never remotivated by redundant compounds in our two samples, whereas this procedure is fairly widespread for the other three concepts:

<table>
<thead>
<tr>
<th>Table 2. Redundant compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target concept (C₄)</strong></td>
</tr>
<tr>
<td><em>eyelash</em></td>
</tr>
<tr>
<td><em>eyelid</em></td>
</tr>
<tr>
<td><em>eyebrow</em></td>
</tr>
<tr>
<td><em>eyeball</em></td>
</tr>
</tbody>
</table>

(cf. also Appendices I-III, where redundant compounds are indicated by "1 identity", which is totally lacking in Appendix IV.)

4. Typology and lexical change

We have seen in section 2. that certain types of source concepts for certain target concepts are attested cross-linguistically so that a polygenic origin is probable. This would point to fundamental cognitive constants. At the same time, we had to recognize that there will never be a unique overall solution and that we will get, at best, different options that are attested polygenetically in several languages.

Now the question arises whether such polygenetically distributed concurring options of conceptualisation are totally random. Mihatsch (2005) has shown on the basis of the "ww" sample, used here as well, that different options of this kind may be explained by typological parameters. In the domain under consideration these are related to the problem of object classification.

Imai & Gentner (1997) have demonstrated in psycholinguistic experiments that the results of object-classification tasks partly depend on the conceptualisation "style" of different languages. It is well known that in languages like English count nouns prevail, whereas in languages like Japanese and Chinese all nouns are transnumeral. Indeed, in object-classification tasks American speakers tend to classify simple objects such as wooden cubes or glass pyramids mainly in terms of *shape*, whereas Japanese speakers give preference to a classification in terms of *substance*.

Mihatsch (2005) found out that something similar can be observed on the basis of the diachronic and comparative data concerning the denominations of the concepts *eyelash*, *eyelid*, *eyebrow*, and *eyeball* within the "ww" sample. She divides the languages of the sample into three classes according to typological-conceptual differences.
in the noun system (the corresponding abbreviations figure in Appendices I-IV to characterize (groups of) languages).\footnote{The Romance languages are throughout characterized as [+PL] in the appendices, but they are not part of Mihatsch's study.}

\begin{tabular}{lrrrr}
\hline
[+PL] & \multicolumn{4}{|c|}{languages with an obligatory plural marking} \\
\hline
[-PL] & \multicolumn{4}{|c|}{languages without obligatory plural marking} \\
\hline
\hline
[PL] & \multicolumn{4}{|c|}{mixed cases (they require further analysis and are not included in Mihatsch's evaluation)} \\
\hline
\hline
As represented in Table 3, [+PL] languages conceptualise eyelash, eyelid, and eyebrow nearly exclusively in terms of shape (6 attestations for eyelash, 8 for eyelid, 7 for eyebrow, against only one attestation in terms of substance, namely for eyelash). The shape solutions are usually based on metaphorical similarity to concepts such as fringe (example 8), edge (example 10), etc.

\begin{table}[h]
\centering
\begin{tabular}{|l|cccc|}
\hline
\textbf{[+PL] languages} & \textbf{eyelash} & \textbf{eyelid} & \textbf{eyebrow} & \textbf{eyeball} \\
\hline
conceptualisation in terms of shape & 6 & 8 & 7 & 8 \\
conceptualisation in terms of substance & 1 & 0 & 0 & 0 \\
\hline
\end{tabular}
\caption{Conceptualisation in [+PL] languages}
\end{table}

In contrast to this, [-PL] languages, as represented in Table 4, conceptualise eyelid, eyebrow, and eyelash preferentially in terms of substance (7 attestations for eyelash, 6 for eyelid, 6 for eyebrow, against only 2 attestations in terms of shape, namely for eyelid). The substance solutions are typically based on taxonomic subordination to concepts such as hair (examples 6, 12, 14), skin (example 17), etc.

\begin{table}[h]
\centering
\begin{tabular}{|l|cccc|}
\hline
\textbf{[-PL] languages} & \textbf{eyelash} & \textbf{eyelid} & \textbf{eyebrow} & \textbf{eyeball} \\
\hline
conceptualisation in terms of shape & 0 & 2 & 0 & 9 \\
conceptualisation in terms of substance & 7 & 6 & 6 & 0 \\
\hline
\end{tabular}
\caption{Conceptualisation in [-PL] languages}
\end{table}

Very differently, the extremely salient concept eyeball (cf. 2.2, 3.2, 3.3), whose salience resides just in its shape (roundness), is actually conceptualised in terms of shape by both classes of languages (8 attestations for [+PL] and 9 for [-PL]; cf. Tables 3 and 4). The data do not display any case of conceptualisation in terms of substance here.

These results suggest that conceptualisation preferences inherent to grammatical systems may have a considerable impact on fundamental options for lexical conceptualisation, which, consequently, can not be considered as totally random. These insights are also a contribution to the discussion concerning linguistic relativity.

5. Conclusion

As we have seen, it is possible to detect cognitive constants that induce polygenetic patterns of lexical change.

In order to get valid results, we have to establish criteria in advance: a well-defined sample of languages, an onomasiological starting point, and a (domain of) target concept(s). A given target concept \( C \) leads us to the corresponding denomination in a given language, a lexical item \( L \). Thanks to our two-dimensional lexicological grid (Fig. 3), we are able to identify, on the one hand, the formal relation \( R \) holding between \( L \) and its diachronic antecedent \( L_a \), and, on the other hand, the cognitive relation \( R \), linking \( C \) to the source concept \( C \), expressed by \( L \). From the perspective of polygenesis, it is important to discover – for a given \( C \), independently of different domain relations \( R \) linking \( L \) to \( L_a \) – triples: of the form \( R \) \((C, C)\) that occur cross-linguistically in the sample, without genetic kinship or linguistic contact explanations of this parallelism (\( C \) corresponding to a specific concept or to a more abstract type of concept). According to this method, we have actually detected, for the conceptual domain around the eye, some cognitive constants.

Our data revealed several typical relations holding between one of the target concepts and particular (types of) source concepts, such as taxonomic subordination to hair for eyelash and eyebrow, metaphorical similarity with fringe or the like for eyelash, metaphorical similarity with bald or with salient hair for eyelash, etc., (section 2.

In general, we observed, for all four concepts, a tendency to dependent conceptualisation, especially within the frame eye (section 3.1.). A remarkable type of conceptual dependency emerges in the form of reciprocal shifts and confusions between eyelash, eyelid, and eyebrow that do not seem to be very salient concepts, whereas eyeball is clearly more salient and independent from the other three concepts (section 3.2.). The general lack of salience of eyelash, eyelid, and eyebrow was confirmed by the existence of redundant compounds denoting these concepts (section 3.3.).

The considerably higher degree of salience of eyeball, due to the roundness of this body part, also strikingly interferes with typological facts: whereas the conceptualisation of eyelash, eyelid, and eyebrow in terms of shape vs. substance seems to depend largely on the conceptualisation "style" of a given language, inherent in its
nominal system as a whole (count vs. transnumeral nouns), the shape-induced conceptualisation of eyeball rules out these typological options (section 4).

To sum up, cognitive onomasiology is able to contribute decisively to the investigation into typology and universals in the lexicon and to our understanding of cognitive constants in particular conceptual domains.

App. II: Target concept (C2): eyelid
(as for the indices * and }, cf. section 3.1.)

<table>
<thead>
<tr>
<th>Cognitive relation</th>
<th>Source concept (C2)</th>
<th>Languages worldwide</th>
<th>Σ “ww”</th>
<th>Σ “rom”</th>
</tr>
</thead>
<tbody>
<tr>
<td>stability?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxonomic</td>
<td>Hair</td>
<td>Swedish† [±pl]</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>subordination</td>
<td>(cf. 6), (12), (13)</td>
<td>Bambara‡, Hausa‡‡, Hopi* [±pl]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bahasa§, Chinese‡, Japanese‡, Lahsa§, Nahastra§, Tamil§, Tzetal§ [*-pl]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metaphorical</td>
<td>Similarity</td>
<td>Estonian (n. 20), Russian, Swahili [±pl] Quechua§, Tibetan§ [±pl]</td>
<td>4 (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(cf. 17)</td>
<td>English§, Sotho§, Swedish§ [±pl] Nepali [±pl]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contiguity</td>
<td>Eyelid</td>
<td>Albanian, Gaelic [±pl] Hopi [±pl]</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(cf. 1a), (1b=9b), (1c), (9a), (18f))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotaxon</td>
<td>Similarity</td>
<td>Gaelic Sotho [±pl]</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(cf. 18a)</td>
<td>German [±pl] Hopi Tibetan [±pl]</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Identity</td>
<td>Eyelash</td>
<td>Estonian§ [±pl] Italian [±pl]</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(cf. 3.3)</td>
<td>Tibetan [±pl], Hungarian§ [-pl]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive relation</th>
<th>Source concept (C2)</th>
<th>Languages worldwide</th>
<th>Σ “ww”</th>
<th>Σ “rom”</th>
</tr>
</thead>
<tbody>
<tr>
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Cognitive onomasiology and lexical change
### Appendix III: Target Concept (C₄): Eyebrow

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### Appendix IV: Target Concept (C₄): Eyeball

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