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Of marks and meaning : a palaeographic, semiotic-cognitive, and comparative analysis of the identity marks from Deir el-Medina.

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2

MODERN SEMIOTICS – LEADING MODELS OF THE SIGN

The previous chapter made clear that the field of semiotic research is extensive. Semiotic questioning can be traced back to ancient Greece and it has spread in many directions ever since, surfacing in the ideas of many diverse groups, currents and traditions throughout the course of history. It is from that eclectic cradle that 'modern semiotics' was born at the beginning of the 20th century.

The term 'modern semiotics' suggests a change at that time; a breach between all semiotic thought before, and that which came after. In a sense, such a breach is defendable, since it was only in the 20th century that semiotics became a systematic study of signs and sign systems that was the object of scientific and, to a certain extent, acknowledged and institutionalized research.[1] Yet, that change of attitude towards semiotics did not delimit its multifaceted interpretations and applications.[2] On the contrary, in the course of the first half of the 20th century semiotic questioning became central to a great number of disciplines, including the cognitive sciences, to the point that Eco spoke of 'an expanding galaxy' that demands 'an ecumenical tolerant approach' by the scholar interested in the field.[3] Yet, 'everyone, no matter how tolerant he may be of other people's opinions, must also enunciate his own'.[4] Writing about semiotics has become a matter of thorough and all-encompassing preparatory study followed by stern selection of only those models and theories that are of interest and relevance for the specific enquiries of the scholar, for indeed, 'no treatment of it can claim to be comprehensive'.[5]

In order not to lose track of our main goal, i.e. the quest for a comprehensive theory in which we can accommodate and explain the Deir el-Medina marking system, the present chapter does not attempt to be comprehensive. Its composition is the result of a preparatory explanatory research phase that was characterized by ecumenical tolerance, and a second phase of selection that highlights the relevant aspects of several models and theories belonging to the dyadic and triadic interpretations of the sign. The main criteria of selection were: 1) the relevance of these models and theories to the Deir el-Medina marking system with respect to the questions of what constitutes a sign and how signs generate meaning within human society, and 2) influential innovations and a disciplinary character brought into the field by these theories and models, which were often the start of a new school or current.

The models and theories are not mutually exclusive. They show growth and development from a structuralist birth to a poststructuralist childhood and recently into a social cognitive semiotic adolescence. They are presented chronologically within their respective traditions (section 1 dyadic

[1] Even though there are no faculties and hardly any academic chairs in the field of semiotics, there are scientific journals, conferences and university programs. See, for instance, *Semiotica*: the journal of the International Semiotic Association, edited by Sebeok; or the *Congress of the International Association for Semiotic Studies*, the first one held in Milan in 1974.

[2] It was mentioned in chapter 1 that there is as yet no consensus regarding the scope of the subject, core concepts or methodological tools.

[3] Eco, *Kant and the Platypus*, 2-3.

[4] *Ibid*.

[5] Chandler, *Semiotics*, xiv.

models; section 2 triadic models) in order to be able to follow this growth.[6] The relevant aspects and their developments, to which each of the semioticians discussed in this chapter contributed,[7] are important to take into consideration in an overall assessment of the divergences and compatibilities of the traditions as well as of their ultimate significance for the Deir el-Medina marking system. Such assessment and significance will be commented upon in the course of sections 1 and 2, while in section 3 there follows a discussion of the marks from Deir el-Medina in the light of a synthesis of the relevant aspects extracted from the traditions.

1 DYADIC MODELS OF THE SIGN

a. Semiology according to De Saussure[8]

> *'It is … possible to conceive of a science which studies the role of signs as part of social life. … We shall call it semiology (from the Greek sēmeîon, 'signs'). It would investigate the nature of signs and the laws governing them.'*[9]
>
> Ferdinand de Saussure

Ferdinand de Saussure (1857 – 1913) was a Genevan linguist who taught Indo-European and general linguistics at the university of his hometown between 1891 and 1912. His study of linguistics is considered revolutionary particularly because of its reaction against the nomenclaturist view on linguistics that had existed since ancient Greek times.[10] Instead of considering words merely as vocal labels which had come to be attached to things and qualities already given in advance by nature, or to ideas already grasped independently by the human mind, De Saussure considered language a product of social interaction which supplied the conceptual framework for man's analysis of reality as well as the verbal equipment for a description of it. Put differently, while in earlier times words were seen as peripheral to man's understanding of reality, De Saussure made man's reality revolve around the social use of words as verbal signs;[11] he considered language to consist of signs through which man's reality is formed and described. The behavior of these signs adhered to a general theory of sign systems. This theory De Saussure called semiology (*sémiologie*).[12] Semiology theoretically comprised a variety of sign systems through which man creates his reality. Apart from language as a system of expressing ideas De Saussure mentioned 'the deaf-and-dumb alphabet, symbolic rites, forms of

[6] The development into cognitive science will be discussed in section 1.d and particularly in chapter 3.
[7] All too often ideas and semiotic breakthroughs are ascribed to famous semioticians, e.g. Barthes or Jakobson, while they had already been suggested by De Saussure or by the semiotician Hjelmslev, be it in different wording. This is, for instance, the case with the idea of syntagmatic and paradigmatic axes or dimensions of sign systems, usually credited to Jakobson, but present already in De Saussure's theory. My decision to present a chronological discussion of the dyadic respectively triadic sign traditions, which some might find rather comprehensive, comes forth partly from my attempt to set this misattribution right, but also partly from my attempt to present a clear introduction to a field that is often considered deeply obscure by people who are not already members of the club (Chandler, *Semiotics*, xiii).
[8] Part of this subparagraph has been published: Van der Moezel, 'Signification in Ancient Egyptian Builders' Marks' in Kammerzell & Rzepka (eds.), *Non-Textual Marking Systems in Ancient Egypt (and elsewhere)*. Lingua Aegyptia, Studia monographica (Seminar für Ägyptologie und Koptologie, Göttingen).
[9] De Saussure, *Course in General Linguistics*, 15.
[10] *Ibid*., 65-67. Cf. the previous chapter.
[11] Harris in De Saussure, *Course in General Linguistics*, ix.
[12] The French term for 'semiotics', as briefly mentioned in the previous chapter .

politeness, military signals' and other social customs, legal procedures and religious rites.[13] Yet, he considered language the most important sign system and linguistics the only branch of semiology: 'The laws which semiology will discover will be laws applicable in linguistics, and linguistics will thus be assigned to a clearly defined place in the field of human knowledge.'[14] De Saussure's theory of semiology is thus strongly linguistic; it was in his account of linguistics that the dyadic tradition of semiology was born. The task to apply the laws of linguistic semiology onto other sign systems was left to his followers, and indeed they did in such diverse fields as art, architecture, fashion, photography, philosophy, literary criticism and social anthropology. Although the implications of De Saussure's technique for dealing with semiological analysis therefore extend far beyond the boundaries of language, we will in this paragraph adhere to his linguistically oriented basic account as it is represented in *Cours de linguistique générale* (1916), a post-mortem publication of De Saussure's theory of signs and sign systems issued from notes taken by his students.[15]

De Saussure's theory was strongly structuralist. In fact, it was a key text in the formation of the intellectual movement of structuralism in the first half of the 20th century.[16] For the first time linguistic research was presented as a systematic study of signs and sign systems with the potential to 'discover the true nature of language systems' by identifying their linguistic structures.[17] Linguistic structures were described as those general, stable structures that underlie language systems as a whole and that are essential catalysts of language manifestations.[18] The study of linguistics, and of semiology as being represented through linguistics, could only depart from these general structures at the expense of particular, individual and ephemeral occurrences of language manifestation. The laws of linguistics and of semiology could thus only be extracted from the study of linguistic structures.

This distinction, between linguistic structure and language manifestation, was one among several dichotomies that came to embody the study of the dyadic tradition of semiology. It represented a first structural level of analysis that came to be variously known as the distinction between *langue* and *parole*, *system* and *usage*, *structure* and *event*, or *code* and *message*.[19] The other dichotomies that represent further structural levels of analysis in De Saussure's theory are:

- the dyadic concept of the sign: *signifier* versus *signified*;
- the dyadic concept of the sign system: *syntagmatic* versus *associative relations*.

We will explain the principles of the dyadic tradition of semiology departing from these three structural levels of analysis.

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[13] De Saussure, *Course in General Linguistics*, 15, 17, 68, 74.
[14] *Ibid*., 16.
[15] De Saussure never published his complete theory himself, according to Culler because he 'had doubts about the foundations of linguistics as then practiced'. Culler, *The pursuit of signs*, 22. One of the earliest and most frequently consulted translations of the French work is by the hand of one of De Saussure's main critics: Harris, De Saussure, *Course in General Linguistics* (2009, first published 1983). It is the translation used throughout this dissertation (referred to as De Saussure, *Course in General Linguistics*), but with consideration of the French original as well as the remarks on translations of terms such as *signifiant* and *signifié* from Chandler, *Semiotics*, xvi and Nöth, *Handbook of semiotics*, 56-57.
[16] Harris in De Saussure, *Course in General Linguistics*, ix. The term 'structuralism' was coined only years later, in 1929, by Jakobson. Waugh & Monville-Burston, *On Language*, 6; Chandler, *Semiotics*, 5.
[17] De Saussure, *Course in General Linguistics*, 9, 17.
[18] *Ibid*., 10. Only by means of linguistic structure can language be articulated.
[19] Chandler, *Semiotics*, 8-9; Nöth, *Handbook of semiotics*, 62-63. De Saussure used the terms *langue* and *parole*; his followers, among whom Hjelmslev, Barthes and Jakobson introduced their own terms for the same distinction.

a.1 Langue versus parole

The semiotic analysis of sign systems must first of all distinguish between *langue* as the study of the system in general, with structure as its sole object, and *parole* as the study of the particular instances of its signs. In De Saussure's linguistic semiotics *langue* comprised the study of linguistic structures, while *parole* concerned the study of the particular instantaneous combinations of individual verbal signs.[20] De Saussure preferred the study of *langue* over the study of *parole*, for he considered a sign system graspable and definable only through study of its structure: 'The linguist must take the study of linguistic structure as his primary concern, and relate all other manifestations of language to it. Indeed … linguistic structure seems to be the one thing that is independently definable and provides something our minds can satisfactorily grasp'.[21] In other words, it is only linguistic structures that can define the meaning of instantaneous *parole* by situating it within linguistic unity. Culler, structuralist and literary theoretical critic who reviewed De Saussure's theory in *The Pursuit of Signs* (2001), describes this principle as follows: 'to understand phenomena is to reconstruct the system of which they are manifestations'.[22]

Yet, in order to identify the exact role of linguistic structures in the totality of a language system, that is, to identify the role of these structures in the generation of meaning through a language, the individual manifestations have to be considered, for it is due only to these manifestations that a language can truly be established.[23] De Saussure focused on spoken language at the expense of writing: following the Aristotelian definition – 'written words are the symbols of spoken words'[24] – he considered writing an artificial representation of 'authentic language', which obscures our view of language by providing (written) signs of (spoken) signs. Therefore, the manifestations of language in his theory were primarily acts of speech.[25] The analysis of these manifestations of speech, i.e. the analysis of *parole*, is a further structural level of analysis, which is characterized by the concept of the dichotomous sign: *signifier* versus *signified*.

a.2 The concept of the sign: signifier versus signified

Signs, according to De Saussure, are then acts of speech, but they are not to be equated with sounds. Sounds merely form the vehicle through which signs are expressed. De Saussure argued that signs are essentially dual entities, uniting a sound pattern (*signifier*) and a concept (*signified*):[26]

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[20] De Saussure, *Course in General Linguistics*, 13-14, 19-20.
[21] *Ibid*., 9.
[22] Culler, *The pursuit of signs*, 27-28. The structuralist idea in which the meaning of the particular (parole, usage, event, message) is dependent upon the underlying structures and rules of the general system (langue, system, structure, code) gave rise to new perspectives in a number of disciplines, e.g. structuralist anthropology (Lévi-Strauss), structuralist literary criticism (Barthes, Greimas) and structuralist psychoanalysis (Lacan). See also De Saussure, *Course in General Linguistics*, 11, 17, 77; Culler, *The pursuit of signs*, vii, 4, 22-23, 26-32; Burke, *History and Social Theory*, 134-136; Chandler, *Semiotics*, 5.
[23] De Saussure, *Course in General Linguistics*, 19.
[24] Cf. chapter 1.
[25] De Saussure considered the sole reason for the existence of writing to be the representation of spoken language, whereas speech truly *established* language: 'the spoken word … is a language's natural sphere of existence' (the spoken word here being a metonymic reference to 'spoken language' – *langue* – which is prioritized over its single manifestation. De Saussure, *Course in General Linguistics*, 19-29. Derrida explains this idea in its historical context, but refutes the deterministic models of 'speech' and 'writing' it implies. Derrida, *Of Grammatology* (1997), 27-44. Nota bene: De Saussure's arguments relate only to modern Western writing. De Saussure did mention two kinds of writing systems: ideographic and phonetic. He did not, however, elaborate on other systems of writing, restricting himself to the modern Western phonetic system. De Saussure, *Course in General Linguistics*, 26-27; Derrida, *Of Grammatology*, 32-33.
[26] De Saussure, *Course in General Linguistics*, xi, 66. The English terms in brackets are mine.

'A linguistic sign is not a link between a thing and a name, but between a concept and a sound pattern [image accoustique]. The sound pattern is not actually a sound; for a sound is something physical. A sound pattern is the hearer's impression of a sound, as given to him by the evidence of his senses. …This other element is generally of a more abstract kind: the concept.'

A sign is the association of an abstract concept with the sound pattern that expresses this concept as it is heard or imagined. This is what De Saussure meant to express through his term *image accoustique*: the sound pattern is not a vocalized sound, it rather is the psychological impression of a vocalized sound inside the head of a receiver. De Saussure's sign is, then, a purely psychological entity that exists only the minds of its sender and receiver (fig. II2-1).[27]

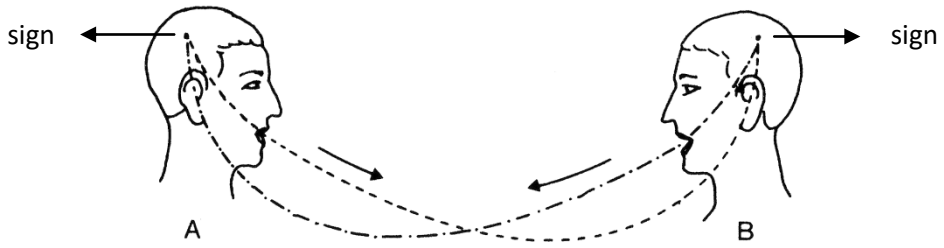

Fig. II2-1 De Saussure's representation of the speech circuit: signs are purely psychological entities that exist only in the mind of their senders and receivers. Based on De Saussure, *Course in General Linguistics*, 11.

De Saussure called the constituents of the sign *signifier* (*signifiant* – sound pattern) and *signified* (*signifié* – concept).[28] Bound together they form the sign: the sign is the whole that results from reciprocal association of the *signifier* with the *signified*.[29] This association is denoted *signification*. It makes a sign unique: any other association between *signifier* and *signified* – even when the *signifier* is the same, but related to a different *signified*, as is the case in homonymy – would form a different sign. This is represented in De Saussure's model of the sign as follows (fig. II2-2a-b):

[27] De Saussure, *Course in General Linguistics*, 12-13, 66-67.

[28] *Ibid.*, 67. In his translation of De Saussure Harris chose to replace the original terms *signifiant* and *signifié* with 'signal' respectively 'signification'. However, these terms are confusing because De Saussure himself used the term 'signification' to refer to the interaction between signifier and signified. Moreover, someone who is familiar with other sign theories, such as Peirce's semiotics, will encounter the term 'signal' with a different meaning. We will therefore adhere to what most scholars who refer to De Saussure do and use the English translation of De Saussure's original terms. A remark similar to this one was made by Sturrock, *Structuralism*, 32 note 17.

[29] De Saussure described the relation between *signifier* and *signified* as two sides of a sheet of paper. De Saussure, *Course in General Linguistics*, 111.

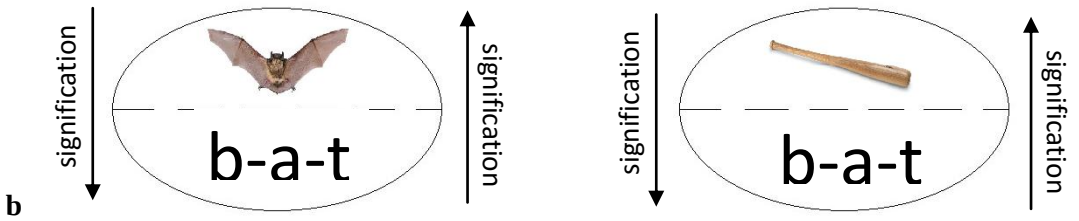

Fig. II2-2a The dyadic sign model of De Saussure, consisting of a signifier signifying a signified, and a signified being signified by a signifier. The reciprocal connection between signifier and signified is called signification. **b**. Each signification between a signifier and a signified is unique. Even when the sound pattern remains the same but refers to a different signified, as in b-a-t referring to the concept of the animal or the concept of the object, we are to distinguish two different signs. Based on Chandler *Semiotics*, 14 (fig. 1.1).

The sign is furthermore unmotivated; that is, the link between signifier and signified is arbitrary.[30] De Saussure argued that the signifier is not determined by that which it signifies; there is no internal, intrinsic or natural relation between the two sign constituents. 'No specific signifier is naturally more suited to a signified than any other signifier.'[31] The signification between signifier and signified is based merely on convention and fixed rule: 'The structure of a language is a social product … a body of necessary conventions adopted by society to enable members of society to use their language faculty'.[32] In De Saussure's account, other than collective agreement there is no reason why for instance the pattern of sounds s-i-s-t-e-r should refer to the concept everyone with an understanding of English thinks of when hearing those sounds. He states that 'The same idea might as well be represented by any other sequence of sounds'.[33] In theory, any other sequence of sounds could do the trick, an idea which is nicely expressed in the quote 'That which we call a rose by any other name would smell as sweet'.[34]

a.3 The concept of the sign system: syntagmatic versus associative relations

De Saussure emphasized that signs do not make sense on their own. Only in relation to other signs as part of a system do they gain value.[35] In going from signs as language manifestations (*parole*) to the system of linguistic structures (*langue*) a 'faculty of association and coordination' must come into operation. The study and definition of this faculty, which creates the linguistic structures that play 'the major role in the organization of language as a system',[36] is dominated by the structural analysis of two kinds of relations signs become involved in: syntagmatic and associative relations.

Signs are in syntagmatic relation when they are 'strung together one after another' and 'enter into relations based on the linear character of languages' (fig. II2-3)'[37] Linearity, said De Saussure,

[30] De Saussure, *Course in General Linguistics*, 68-69. De Saussure has often been criticized for denoting the sign as *arbitrary* as he does in his 'First principle: the sign is arbitrary' (p. 67). Critics have argued that the link between signifier and signified cannot be arbitrary, because this would imply that the individual has the power to alter it at will, which is not the case once a linguistic sign has become established in a community. They have rather called the link between signifier and signified *unmotivated*. Yet, despite De Saussure's use of the term *arbitrary*, he foresaw this criticism and the critical reader will find that De Saussure already called the sign *unmotivated* instead of *arbitrary* himself on pp. 68-69. Cf. Chandler, *Semiotics*, 27-28.
[31] Chandler, *Semiotics*, 22-23.
[32] De Saussure, *Course in General Linguistics*, 9-10.
[33] *Ibid*., 67-68. De Saussure argued the same for signs of writing: pp. 117-118.
[34] Shakespeare, *Romeo and Juliet* (ca. 1591) Act II Scene II. For a translation, see Craig (ed.), *The Complete Works of William Shakespeare*, 772.
[35] De Saussure, *Course in General Linguistics*, 110-116; Chandler, *Semiotics*, 20.
[36] De Saussure, *Course in General Linguistics*, 13.
[37] *Ibid*., 121.

precludes the possibility of uttering two signs simultaneously. These signs must be arranged consecutively in spoken sequence. They form linear, sequential combinations which De Saussure called syntagmas.[38] A syntagma comprises two or more consecutive signs. In linguistics these signs may be morphemes, or words, or groups of words, or complex units of any size and kind such as compound words, phrases and sentences. Examples of syntagmas given by De Saussure are *re-lire* (sequential combination of morphemes), *contre nous* (sequential combination of words), *contremaître* (sequential combination of two compounds), *la vie humaine* (sequential combination of words in a phrase) and *s'il fait beau temps, nous sortirons* (sequential combination of words in a sentence).[39] De Saussure acknowledges that the most frequent syntagmas are sentences, but warns that, although sentences are phenomena of *parole* in that they are language manifestations, syntagmas are not. They are rather the moulds in which particular instances of language can be formed.[40]

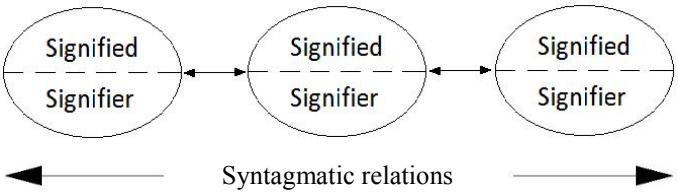

Fig. II2-3 Linear, sequential relations between signs, designated as syntagmatic relations. The signs form a syntagma. Based on Chandler, *Semiotics*, 20.

Beyond the syntagmas, those signs that have something in common are associated together in memory. They form mnemonic, or semantic and/or grammatical associative groups which are not based on linear sequence, but are rather constituted from members that form connections in the brain.[41] While syntagmas present signs in a fixed sequence with a specific number of elements, associative groups have no particular number of signs in them, nor do these signs occur in any particular order. De Saussure stated that it is impossible to say in advance how many signs the memory will suggest and in what order. Any given sign may act as the centre of a constellation, from which connected terms radiate *ad finitum*. Such a constellation is best explained with an example of the word as linguistic sign centre (fig. II2-4).[42]

[38] De Saussure, *Course in General Linguistics*, 121.
[39] *Ibid*., 121-122.
[40] *Ibid*., 122-123.
[41] *Ibid*., 122. In fact, this is one of the earliest accounts of connectionism theory: a visual imaging method which is discussed in the next chapter.
[42] *Ibid*., 124.

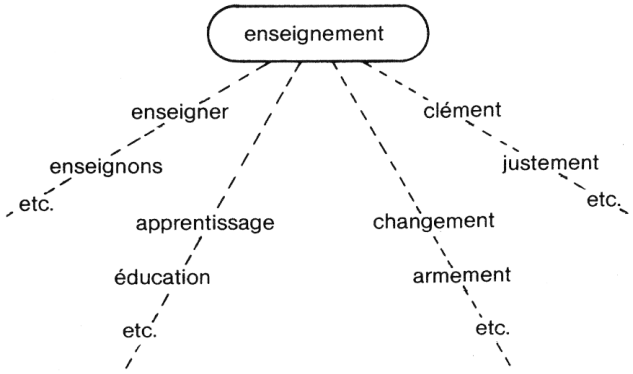

Fig. II2-4 A constellation of associative groups radiating from the sign 'enseignement'. De Saussure, *Course in General Linguistics*, 125.

The associative relations can be of various kinds, based on different sorts of commonalities. For instance, the members of an associative group may all have a certain grammatical element in common, such as the verbal prefix *enseign-* in *enseign*ement, *enseign*ons, *enseign*er, and so on; or the suffix -*ment* in enseigne*ment*, arme*ment*, change*ment*, and so on. The association may also be based on semantic similarity, such as in *enseignement*, *instruction*, *apprentissage*, *éducation*, and so on; or it may be based only on similarity of sound patterns, for instance in the final syllables (here not the suffix) of enseigne*ment*, clé*ment* and juste*ment*. There may also be a double associative link based on form as well as on meaning. Any word, or any other sign, can evoke in the mind whatever is capable of being associated with it in some way or another.

By entering into syntagmatic and associative relations a sign becomes imbued with *value*. De Saussure emphasized that within a syntagma the value of a sign is derived particularly through the principle of negative differentiation: 'concepts … are defined not positively, in terms of their content, but negatively by contrast with other items in the same system. What characterizes each most exactly is being whatever the others are not'.[43] Thus, by its position within a syntagma, a sign acquires value simply in opposition to what precedes, or to what follows, or to both.[44] Chandler provides a clarifying example: if we would attempt to 'teach someone who did not share our language what we mean by the term 'red'', 'we would be unlikely to make our point by simply showing that person a range of different objects which all happened to be red – we would probably do better to single out a red object from a set of objects which were identical in all respects except colour.'[45] The concept of 'red' can then be grasped by deviation of the norm. Within an associative group a sign acquires value by negative differentiation with other members; it is chosen for those characteristics, which the other members have not.[46]

In sum, the value of signs in a sign system is generated as follows: our memory holds in store all the various moulds, or syntagmas, of every kind and length. When a syntagma is brought into use, we call upon associative groups in order to make our choice among signs to fill the syntagma.[47]

[43] De Saussure, *Course in General Linguistics*, 115; Chandler, *Semiotics*, 21.
[44] De Saussure, *Course in General Linguistics*, 121.
[45] Chandler, *Semiotics*, 21.
[46] Another example is provided by De Saussure himself: when someone says 'marchons!', he thinks unconsciously of various associative groups and terms, such as 'marche!', 'marchez!', or 'montons!', 'mangeons!', and so on. One of these terms is sought and selected precisely because of its differentiation to the others. De Saussure, *Course in General Linguistics* (2009), 128. For the activation of associative groups, see chapter 3: semantic network analysis.
[47] De Saussure, *Course in General Linguistics*, 128.

a.4 The meaning of signs

De Saussure's sign model is dual in nature in two respects: 1) it contains a level of the sign (*parole*) and a level of the sign system (*langue*), and 2) each sign within a sign system consists of a signifier and a signified. Consequently, De Saussure's conception of meaning was dual in nature. Meaning arises from 1) the relation between signifier and signified on the level of the sign – *signification*, and 2) the relations between signs on the level of the system – *value*. The meaning of a sign is thus more than the sum of its parts, for the value of this sum is determined only in the context of the system.[48] De Saussure argued that 'To think of a sign as nothing more would be to isolate it from the system to which it belongs', which in his opinion would lead to the supposition that one can induce an entire system from its individual signs (*parole*), while on the contrary, the system (*langue*, or linguistic structure) should be the starting point from which one can deduce its constituent elements.[49]

De Saussure's concept of the relational identity of signs and their relational operation within a sign system is at the heart of his structuralist theory:[50] signs would have no intrinsic meaning as autonomous entities; rather they derive significance from oppositive relations as a system.[51] All meaning, in his opinion, is built upon relations within, but especially between signs (fig. II2-5).

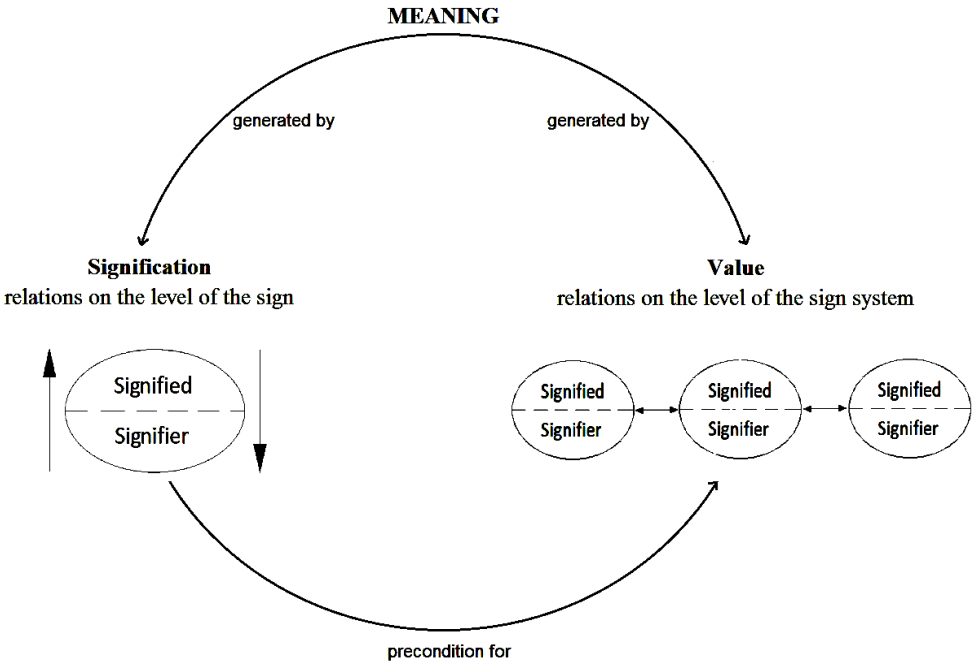

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Fig. II2-5 De Saussure's theory of meaning being generated by signification between signifier and signified on the level of the sign and by the value of a sign in relation to other signs within the system. In order to determine the value of a sign within the system its signification must of course be a precondition.

[48] De Saussure, *Course in General Linguistics*, 110-120.
[49] *Ibid*., 112.
[50] Chandler, *Semiotics*, 21. A scholar who was much influenced by this idea was Lévi-Strauss. In isolating fundamental oppositions he was describing 'sets of categories' (i.e. associative groups) that make useful logical tools for expressing relations. Only through these relations the categories have expressive function. See e.g. Lévi-Strauss, *La pensée sauvage* and *Le totéisme aujourd'hui*. Culler, *The pursuit of signs*, 25-28.
[51] *Ibid*., 29-30.

a.5 Discussion

The structuralist idea that signs and sign systems consist of constituent parts that together generate meaning was revolutionary: it brought clarity into the study of language as a sign system by offering basic methodological tools. A focus on signs and the question of meaning was not new (cf. chapter 1), but De Saussure's primacy granted to relations and systems of relations was a most 'powerful contribution to our understanding of the functioning of signs'.[52] De Saussure did not simply offer a new interpretation; according to Culler, who designated 'interpretations' as 'the enemy', there were already too many of those. Rather, what De Saussure did was to go beyond interpretation and, by constructing an account of rules and conventions concerning methodological structural distinctions that is still essential in many semiological analyses, to search for advancement of our *understanding of the operation* of sign systems.[53] Culler agrees that 'If we are to understand our social and cultural world, we must think not of independent objects but of … systems of relations' which enable the objects to have meaning.[54]

Still De Saussure's theory was criticized in many respects. For instance, the study of language had been focused upon an evolutionary historical and comparative approach during much of the 19th century.[55] De Saussure's focus on structural relations of a linguistics consisting of signs now caused him to draw a radical distinction between diachronic or evolutionary linguistics on the one hand, and synchronic or static linguistics on the other. He gave priority to the latter: 'It is clear that the synchronic point of view takes precedence over the diachronic, since for the community of language users that is the one and only reality. The same is true for the linguist. If he takes a diachronic point of view, he is no longer examining the language, but a series of events which modify it.'[56] In other words, the traditional diachronic point of view represented *parole*, the instantaneous manifestations, while it was *langue* in general to which the semiological linguist primarily had to direct his focus. As a consequence, De Saussure's sign could only be a purely psychological, immaterialized entity. Nothing could exist beyond the signifier and the signified. Referential objects were not considered from the point of view of the functioning of the code;[57] De Saussure's semiology operated completely within the sign system. Signs, that is linguistic signs, had no intrinsic substance or essence for him, precisely because he rejected nomenclaturism: linguistic categories are not simply a consequence of some predefined structure in the world; there are no natural concepts or categories which are simply reflected in language, and for which language has set labels. On the contrary, language plays a crucial role in constructing reality: it does not reflect reality, but rather constructs it.[58] This detachment from social and historical context was rejected. The idea that both signifier and signified were merely existent in the minds of sender and receiver, and that the sign was therefore cut off from the real world in that it lacked something to refer to was unacceptable to many, among whom Ogden & Richards, who criticized De Saussure for 'neglecting entirely the things for which signs stand'.[59]

[52] Culler, *The Pursuit of Signs*, viii-ix, 24-29.
[53] *Ibid*., xx-xxi, chapter 1.
[54] *Ibid*., 25.
[55] De Saussure, *Course in General Linguistics*, x.
[56] *Ibid*., x, 89.
[57] Eco, *A Theory of Semiotics*, 59
[58] Chandler, *Semiotics*, 24-25.
[59] Ogden & Richards, *The Meaning of Meaning*, 8. Cf. Chandler, *Semiotics*, 25, referring to Stam, *Film Theory*, 122.

Applied to ancient Egyptian material, De Saussure's theory does work for Goldwasser, who considers it in her semiotic analysis of ancient Egyptian hieroglyphic script.[60] She argues that, when Egyptian script was invented as a semiotic writing system (the first results of which she sees in the Narmer palette), certain concepts were selected among innumerable visual options available in the cultural repertoire to be permanently fixed as 'mental images' to hieroglyphic signifiers. Not particular instances, but standard idealized mental concepts were henceforward nailed to particular signs. For instance, in the word *s*, 'man', the sign of the seated Egyptian male figure in loincloth represents the 'best example' or prototype of the category 'man'; it was considered the ideal representation to refer to the concept of 'man', and in extension 'human being'. In the word *rmṯ*, an Egyptian seated male in first position followed by an Egyptian seated female were considered the ideal representations to refer to the collective 'people'. These signs were used throughout the history of Egyptian hieroglyphic script, nailed to the concepts of 'man' and 'people'.[61] The selection of preferred concepts out of particular instances means that a sign can only exist as a psychological entity: the words *s* and *rmṯ* do not refer to particular, real-world individual Egyptian males and females, but conceptually represent entire categories. This detachment from the real world is in fact what makes a writing system efficient and generally applicable in different situations.

Yet, Goldwasser found that De Saussure's theory is defective in a different respect; that is, its application to script in general, and picture script such as ancient Egyptian hieroglyphic script in particular. De Saussure focused on spoken language at the expense of written language and therefore dealt only with one signifier and one signified: the sound pattern and the concept it referred to. In alphabetic script, however, one deals with a written signifier (e.g. 'cat') which refers to a phonetic signified (*kæt*), which in turn refers as a phonetic signifier to the signified concept *cat* (fig. II2-6). These are, in fact, two successive processes of signification, in which the phonetic signified/r in mid-way plays a double role, connecting the written signifier to the eventual concept *cat*.

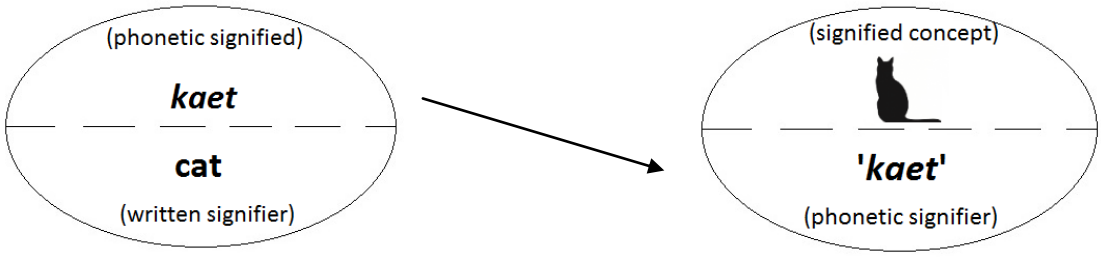


Fig. II2-6 Two successive processes of signification in linguistic writing systems. Departing from the linguistic signifier one needs first to take the mid-way step of the phonetic signified/r before one arrives at the concept that is signified.

In picture script this becomes even more complex: pictorial value becomes a 'built-in' property of the script[62] and thus acts as another 'lifeline' in addition to the phonetic value of a sign. Consider the hieroglyph . It occurs in the words for diverse types of bird and can thus be considered a bird with prototypical status in the ancient Egyptian worldview.[63] In a pictorial reading it is, then, a pictorial

[60] Goldwasser, *From Icon to Metaphor*.
[61] *Ibid*., 8-10, 31.
[62] *Ibid*., 29.
[63] Goldwasser, *Prophets, Lovers and Giraffes*, 19-20.

signifier that signifies the select pictorial concept of *duck*, and in extension *bird*. In a phonetic reading it is a phonetic signifier '*s3*' that signifies the phonetic signified 'duck'. Fig. II2-7 visualizes these pictorial and phonetic readings, which Goldwasser calls pictorial and phonetic trails.

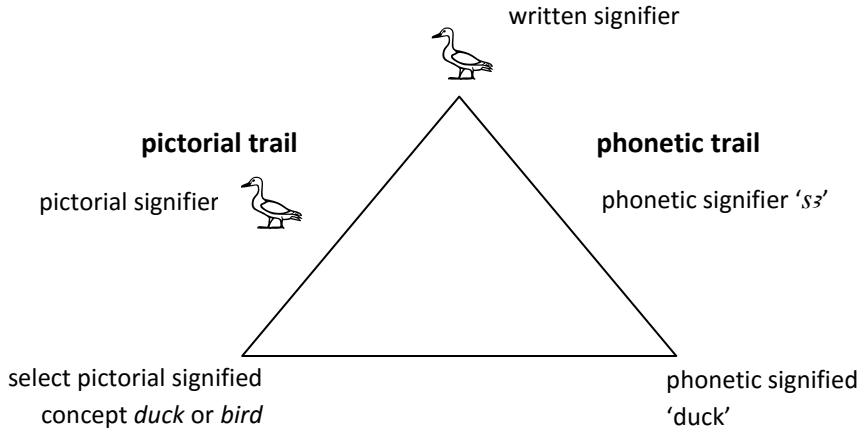


Fig. II2-7 Goldwasser's consideration of the Saussurean sign for ancient Egyptian hieroglyphic writing on the level of the sign: *s3*. Based on Goldwasser, *From Icon to Metaphor*, 40.

Another example is the hieroglyph 𓇋 (fig. II2-8). As a written signifier in the pictorial trail the sign is actually a fusion of two hieroglyphs: 𓏏 and 𓎛. Together they signify the select pictorial signified, the concept *act of bringing a gift*, with 𓏏 signifying the gift and 𓎛 the movement involved. Goldwasser hypothesizes that the signs were first written separately *𓏏𓎛, but soon merged into 𓇋 to enable a person to represent pictorially not only the material gift, but the abstract notion of *bringing* as well. As a written signifier in the phonetic trail, 𓇋 is a phonetic signifier '*jn*(*j*)', which refers to the phonetic signified, the verb 'to bring'. Thus, we end up with 𓇋 as a written signifier that, consisting of a pictorial signifier with a select pictorial signified signifies the *act of bringing* pictorially and, consisting of a phonetic signifier with a phonetic signified signifies the verb 'to bring' phonetically.

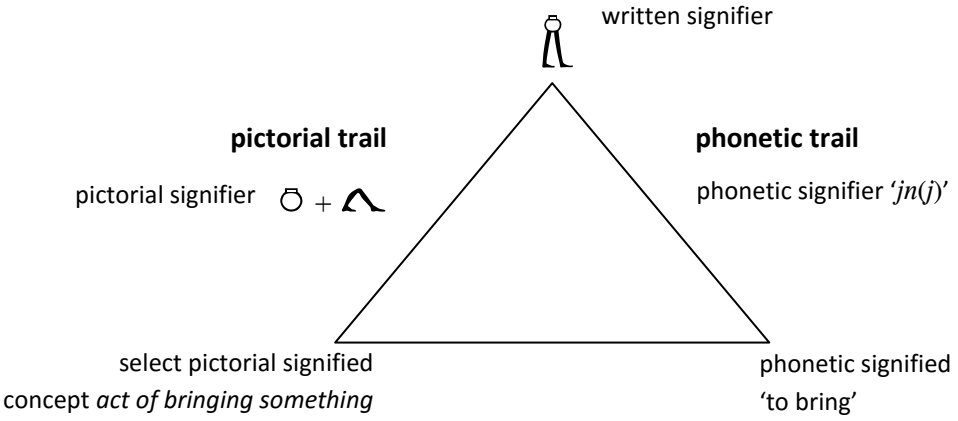


Fig. II2-8 The hieroglyphic sign 𓇋 '*jn*(*j*)' reconsidered as a Saussurean sign.

The pictorial and phonetic reading processes are probably activated simultaneously in the mind of the reader.[64] The horizontal line between the two trails indicates that they can work together: they strengthen each other so that there is no doubt as to what is the signified. The two information avenues coincide at the end of the process in the same pictorial and phonetic signifieds *'duck'*/'duck'.[65] Thus, in the examples of Figs. II2-7 and 8 one could say that each trail contributes with 50% to the generation of meaning by the hieroglyph . However, when this hieroglyph is accompanied by an ideogram stroke or a phonetic complement , then the focus of attention of the reader is diverted either to the pictorial or to the phonetic trail. In other words, on the level of the sign system, in combination with other signs, the reader is guided along one of both trails. In the case of he or she is hinted towards a pictorial understanding of , and in the case of he or she is encouraged to read phonetically (fig. II2-9). In the latter case, the pictorial signification and value of are neutralized.

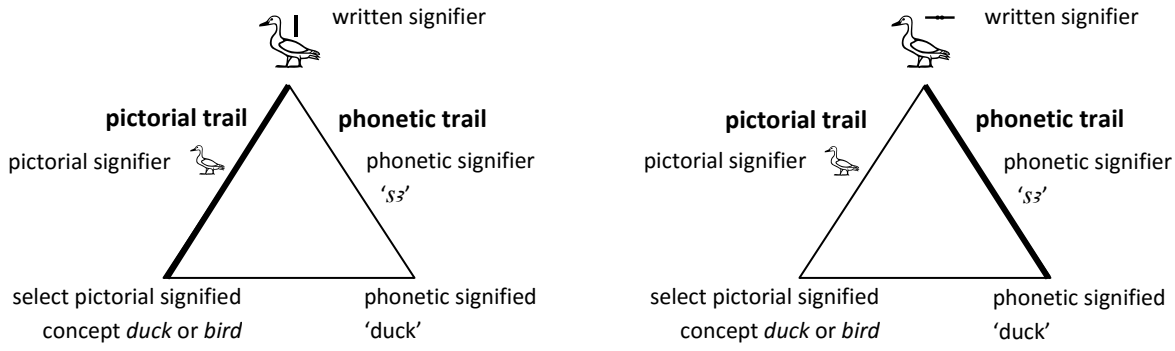


Fig. II2-9 Goldwasser's adaptation of the Saussurean sign model for ancient Egyptian hieroglyphic writing on the level of the system: *s3*.

Thus, instead of dealing simply with a signifier and a signified as in De Saussure's model, the hieroglyphic sign takes into account two processes of signification: a process represented by concrete signification along a pictorial trail, and one represented by abstract signification along a phonetic trail. The trails can work together, but in context the reader may be guided along one of them. A similar restructuring of the Saussurean sign is necessary when we want to apply the theory to the marks from Deir el-Medina. Just like hieroglyphs, the marks are not signifiers in the Saussurean sense; they are not sound patterns, but visual signifiers that may be understood as sound patterns in the phonetic trail, but may just as well be understood as pictorial signifiers in the pictorial trail. In Part I we concluded that a significant number of marks, at least in dynasty 20, is related to hieroglyphic (or hieratic) script. Such marks may, as written signifiers in the phonetic trail, be understood as sound patterns. Thus, consider the mark , which is attested for *Jn(j)-ḥr-ḫʿw* (fig. II2-10):

[64] For simultaneous cognitive processes, see also this Part, chapter 3.
[65] The hieroglyphic written signifier is in this case called an 'ideo-phonograph' by Derrida. See Goldwasser, *From Icon to Metaphor*, 40.

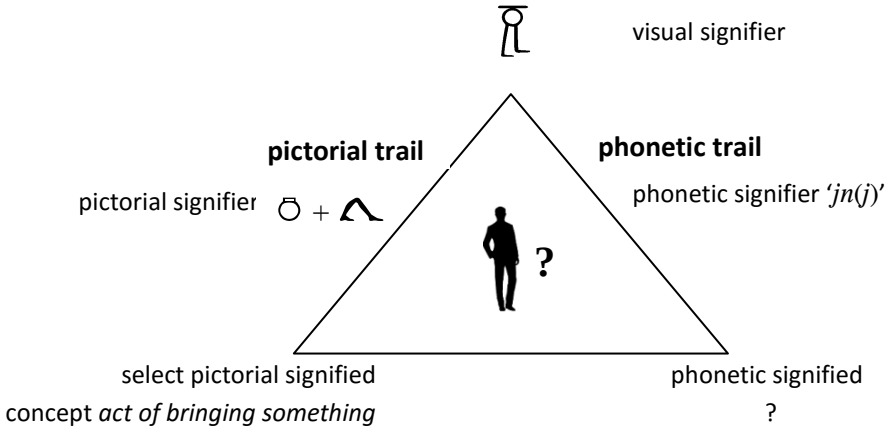


Fig. II2-10 The Saussurean model applied to the mark 𓂝 as visual signifier.

We now have an overview of the possibilities which the mark 𓂝 as a visual signifier has, and by means of which it can signify. But here we encounter a problem. The signifieds of the marks should be the workmen, for it is to the workmen that the marks ultimately refer. But they are neither accommodated in the Saussurean model, nor in an adjusted Saussurean model along the pictorial or phonetic trails. Certainly, when we know that the mark 𓂝 was used by a workman named *Jn(j)-ḥr-ḫʿw*, we may assume that the signification of the mark follows the phonetic trail and as a phonetic signifier is an abbreviation for the name '*Jn(j)-ḥr-ḫʿw*'. But the problem remains: the mark 𓂝 is attested for *Jn(j)-ḥr-ḫʿw* in dynasty 19 in the reign of Ramesses II[66] as well as in dynasty 20 in the reigns of Ramesses III and IV.[67] Considering the timespan, this cannot be the same man. Thus, when we read the mark 𓂝 along the phonetic trail and assume its visual signifier was an abbreviation for the name '*Jn(j)-ḥr-ḫʿw*' (the phonetic signified), we can still not link the mark to its rightful owner (fig. II2-11):

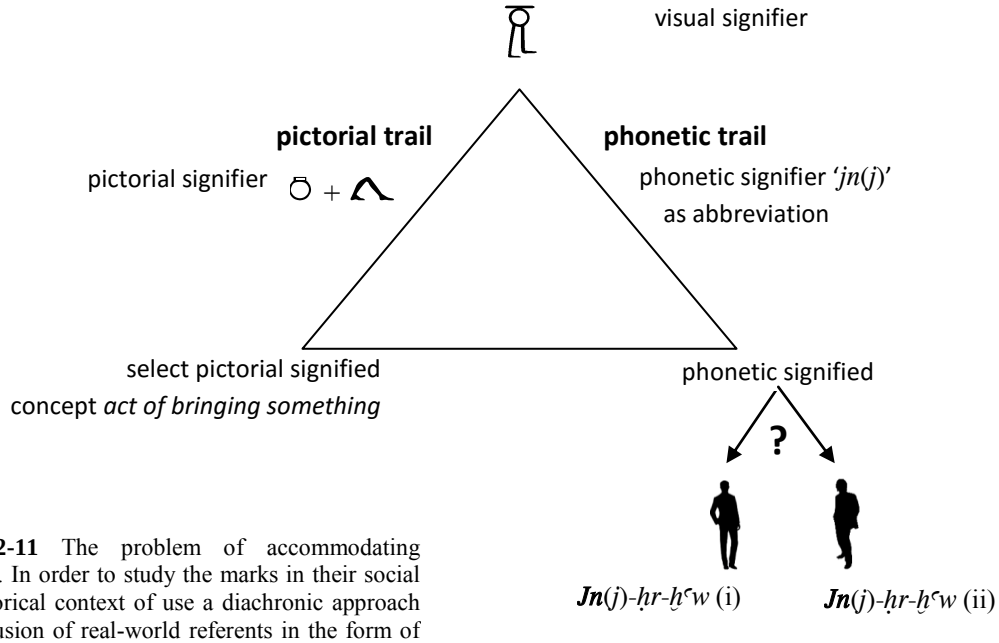


Fig. II2-11 The problem of accommodating referents. In order to study the marks in their social and historical context of use a diachronic approach and inclusion of real-world referents in the form of individual workmen are necessary.

[66] e.g. ostracon Cairo JE 96335.
[67] e.g. the potsherds Nagel, Céramique 046, fig. 29 nr. 247-253 from tomb N 359 of *Jn(j)-ḥr-ḫʿw* (ii), Western Cemetery.

The solution must be to include real-world referents: signs need real-world referents in order to convey specific meaning and function in society. With respect to the identity marks, we need the actual, individual persons to whom the identity marks ultimately refer. In the case of 𓃀 they are *Jn(j)-ḥr-ḫʿw* (i) and *Jn(j)-ḥr-ḫʿw* (ii); only they as real-world referents can make the difference between what are actually two different marks with two different meanings. Fig. II2-11 shows that the mark 𓃀 in the Saussurean sign model cannot distinguish between the two names *Jn(j)-ḥr-ḫʿw*. De Saussure's theory does not accommodate this difference in identity, simply because the actual persons *Jnj-ḥr-ḫʿw* (i) and (ii) do not have a role as the ultimate signifieds. Understanding the marks as abbreviations to refer to the names of the workmen is no solution, for it is an infamous fact that many namesakes lived in Deir el-Medina. Of course, one may argue that on the level of the sign *system* both marks 𓃀 occur in different contexts, each related to other identity marks; that is, *Jn(j)-ḥr-ḫʿw* (i) and *Jn(j)-ḥr-ḫʿw* (ii) each occur in association with different workmen, and therefore they are indirectly present as the referents of the marks on the level of the system. But such generation of meaning merely out of the relations between signs on the level of the system is not enough. We need referents as signifying constituents of the marks themselves. That is, we need the marks to be autonomous entities with intrinsic meaning referring to the real world in order to be able to study the marks in their social and historical context of use. A diachronic approach through the inclusion of real world referents is necessary in order to advance our understanding of the functioning of the marks.

The problems with De Saussure's sign theory do not end here. In the example 𓃀 is a mark from the group of hieroglyphically inspired marks. As such, it can be interpreted as a phonetic signifier '*jn(j)*', and as an abbreviation for the name '*Jn(j)-ḥr-ḫʿw*' in the phonetic trail. But not all the marks from Deir el-Medina are related to script and can be understood as phonetic signifiers in the phonetic trail. How do the marks from Group II refer to their signifieds? Consider, for instance, 𓄡, which is attested as the mark of *Ns-ʾImn* (iii) (fig. II2-12). As far as we know, it has no sound pattern. It has been suggested to have had pictorial value (Grandet suggested a stool, cf. Table I3-1 mark II 001), but it remains unclear how *Ns-ʾImn* (iii) could be pictorially connected to this mark.

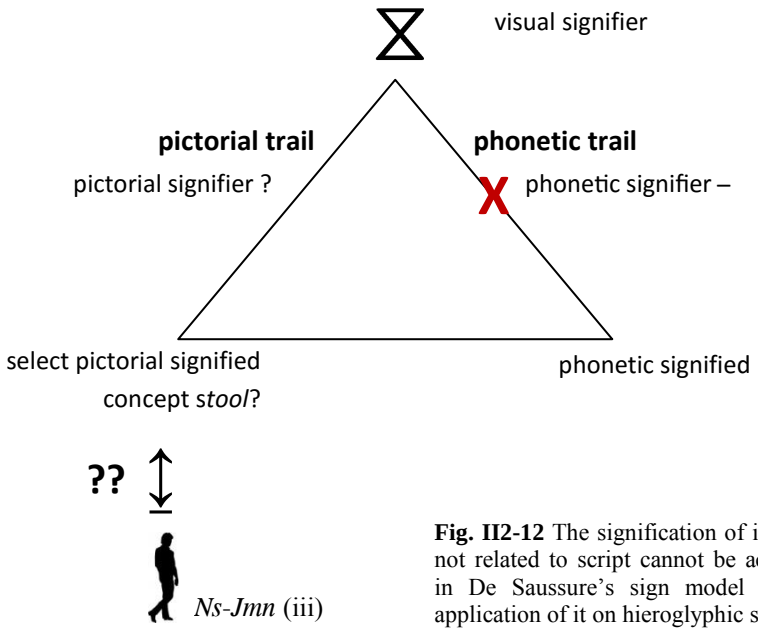


Fig. II2-12 The signification of identity marks that are not related to script cannot be accommodated, neither in De Saussure's sign model nor in Goldwasser's application of it on hieroglyphic script.

If not via linguistic sound pattern, there must be some other naturally, culturally or cognitively defined or agreed connection between the signifiers and the workmen for the marks to be effective and efficient in the administrative communication, but De Saussure's model and theory and Goldwasser's reconsideration do not accommodate this.

In sum, De Saussure's theory was important in that it offered a revolutionary new way of analyzing language: it offered new, structural methodological tools for the foundation of a true science of linguistics that considered language as a coherently organized structure. But this pioneering work in fact contributed little to a general theory concerning the operation and interpretation of signs and sign systems.[68] De Saussure did provide the first steps toward such a theory, but he did not yet solidify a 'central place' for it 'within the humanities and social sciences'.[69] Several aspects of his theory appeared to be inapplicable in the analysis of systems that were not composed of spoken linguistic signs, in particular the purely psychological nature of the sign and the exclusion of real-world referents. In other words, when signs do need to be autonomous entities with intrinsic meaning referring to material, individual referents, the theory is defective. While for written linguistic systems such as ancient Egyptian hieroglyphic script an adaptation of the theory that includes a visual dimension of the linguistic sign might make it useful semiotic analysis, its inadequateness for the accommodation of the marks from Deir el-Medina can be summarized in three points:

- De Saussure's emphasis on relations between signs was an important innovative view, but we cannot let it overshadow the meaning of the marks as autonomous entities with intrinsic meaning and real-world reference;
- In relation to this, we cannot accept a purely synchronic approach to the analysis of the marks, as only a diachronic approach involving marks with intrinsic meaning and real-world reference can advance our understanding of the their functioning in social and historical context;
- Finally, the theory offers no accommodation for marks that have no relation to linguistic script. Goldwasser's reconsideration at least offers room to include pictorial signification and value in addition to phonetic signification and value, but it still offers no accommodation for the referents and marks that seem to have no relation to the pictorial hieroglyphic script.

The problem of the exclusion of real-world referentiality was not solved in the semiological tradition that followed a dyadic interpretation of the sign. Referentiality only became a feature in Peirce's triadic model of the sign (section 2). However, before we skip to his model, we cannot ignore certain developments in the dyadic tradition that are nonetheless important for an investigation into the generation of meaning by the marks. We will see that even without a referent we can go beyond the possibilities for signification that exist within the Saussurean model and therewith approach the workmen a little bit better. We therefore continue in sections 1.b-d with those followers of De Saussure, who successively redefined the theory and made it more generally applicable in the search for an answer to the question of how signs convey meaning: Hjelmsev, Barthes, and Jakobson.

[68] Nöth, *Handbook of Semiotics*, 63; Mounin, *Ferdinand de Saussure*, 33.
[69] The quote is from Culler, *The pursuit of signs*, vii. See also Chandler, *Semiotics*, 212.

b. Semiology according to Hjelmslev[70]

Semioticians after De Saussure struggled with the idea of the sign as a purely psychological entity. They reinterpreted the distinction between psychological sound pattern and abstract concept as a distinction between more broadly any form of any kind of sign as it is seen, heard or otherwise experienced, and its content as that to which the form refers. This, however, led to the idea that form is merely an arbitrary container which is meaningless in itself and from which content – meaning – could be extracted without an active process of interpretation.[71] In the search for a solution and more generally for an answer to the question of how signs generate meaning several steps can be discerned. The first step was taken by the Danish structuralist linguist and semiologist Louis Hjelmslev (1899 – 1966), who was greatly influenced by De Saussure. Hjelmslev's theory is very complicated in that it remains highly abstract and uses an elaborate impenetrable terminology,[72] which are probably reasons that explain why introductory semiological works do not always give full credit to Hjelmslev for ideas that were later incorporated, developed and successfully applied to the analysis of linguistic as well as nonlinguistic sign systems by others. Here, we focus upon one aspect of his theory which is most important to us: the idea of processes of selection and combination which, on the level of the sign, find expression in a stratification of De Saussure's sign-components, and on the level of the sign system in a schematized reconsideration of De Saussure's syntagmas and associative groups. Hjelmslev's account remained a static structuralist theoretical account and it was only in the following steps taken by Barthes and Jakobson that the processes of selection and combination were given an active role in the creation of meaning, even as processes underlying two cognitive patterns that are neurologically inherent to the human brain. This is discussed in sections1.c-d and in chapter 3. The present paragraph is presented to show how Hjelmslev arrived at the processes in the first place.

b.1 Stratification of the Saussurean sign

First, Hjelmslev reorganized the Saussurean sign into an 'expression-plane' (signifier) and a 'content-plane' (signified); expression and content became the sign-constituents of the Hjelmslevian sign.[73] Second, he stratified both planes in order to imbue De Saussure's immaterial psychological forms with substance (fig. II2-13); the sign, in both of its planes, was built up from purport, substance and form:

[70] Two versions of Hjelmslev's *Prolegomena to a Theory of Language*, first published in 1943, were used for this chapter. The version from 1953 is stored in the University Library in Leiden, but appears to be a summary of the complete work. The version from 1969 is complete can be read online against payment: (https://www.scribd.com/doc/130368171/Hjelmslev-1961-Prolegomena-to-a-Theory-of-Language).
[71] Chandler, *Semiotics*, 56.
[72] Cf. Eco's critique on Hjelmslev's theory in 'The Influence of Roman Jakobson on the development in semiotics' in Armstrong & van Schooneveld, *Roman Jakobson*, 41; also cited in Nöth, *Handbook of Semiotics*, 65.
[73] Hjelmslev, *Prolegomena* (1969), 47; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 368-369.

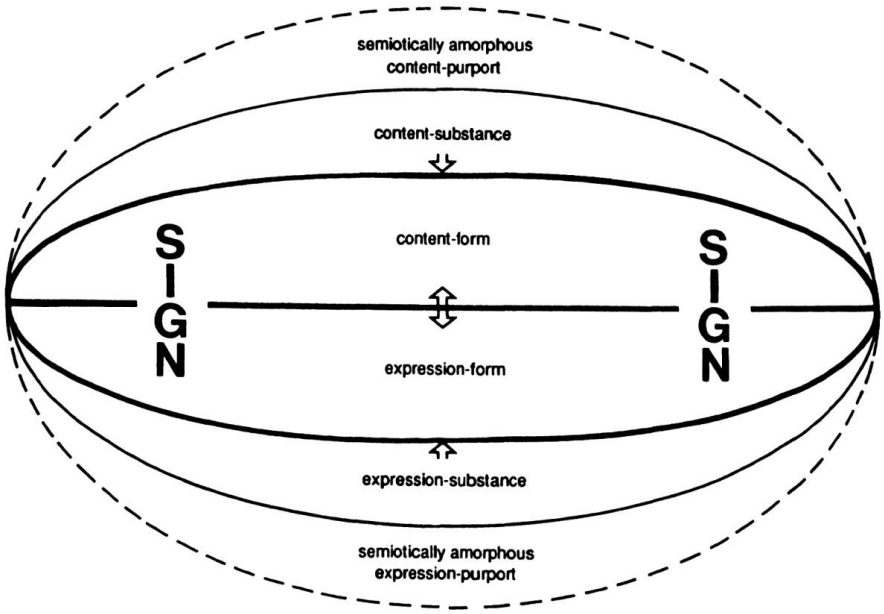


Fig. II2-13 The Hjelmslevian stratified model of the sign in which the form-strata of a sign system shape formed substances out of the purport to act as the content-plane and expression-plane of a sign. Based on Nöth, *Handbook of Semiotics*, 67.

Hjelmslev agreed with De Saussure that semiology was first and foremost a science of forms, not of substances. The strata of form remained for him the core and primary objects of semiological research; hence the restriction of the term 'sign' to these strata. However, he emphasized that the expression and the content of a sign do not simply exist: they are the result of a 'forming process'. The ultimate sign consists of a signifying plane, which is substance given form as expression, and a signified plane, which is substance given form as content.[74] The stratifications of this forming process with regard to the linguistic sign can be described as follows (summarized in fig. II-2-14 below):

Every sign begins with purport. Signs do not simply exist; their constituents, expressions and contents are selected and formed out of a vague, shapeless, indistinct nebula: an amorphous presemiological sphere that lacks any semiological structure in itself.[75] Hjelmslev introduced the term purport to designate this nebula; Eco later spoke of 'matter'.[76] In the content-plane, content-purport is an amorphous thought-mass: a mass of all potential concepts, thoughts, notions and senses that can serve as content. In the expression-plane, expression-purport is mass of all potential phonetic and phonological expressions: a mass of 'amorphous, unanalyzed sequences of sounds', or a 'vocalic continuum'.[77] Purport is common to all languages; that is, all languages draw from this amorphous presemiological mass of potentials.

Each language selects from the purport those concepts and sounds to be given form by content-, respectively expression-forms. Content- and expression-forms are abstract notions of concepts and patterns, or moulds, that differ from language to language. They are defined on the level of the sign system in relation to other concepts and patterns; that is, in oppositive relation or negative

[74] Hjelmslev, *Essais linguistiques*, 34-43, 27.
[75] Hjelmslev (in *Prolegomena* (1953), 31-32 and (1969), 51-52) follows an idea that was already suggested by De Saussure, *Course in General Linguistics*, 110-111: 'In itself, thought is like a swirling cloud, where no shape is intrinsically determinate. No ideas are established in advance, and nothing is distinct, before the introduction of linguistic structure … [to] this nebulous world of thought'. Cf. Nöth, *Handbook of Semiotics*, 61, 66-67; Chandler, *Semiotics*, 18-19. Also compare the concept of purport to the pool of visual communication that is suggested as the source from which marking as well as writing systems developed in Part III, chapter 2.
[76] Eco, referred to in Nöth, *Handbook of Semiotics*, 66-67.
[77] Hjelmslev, *Prolegomena* (1969), 52; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 378.

differentiation.[78] In fact, they constitute the linguistic structure (*langue*) on the level of the system. On the level of the sign, they are patterns of sounds in the expression-plane: phonological patterns that are particular to a language. In the content-plane of a sign, they are abstract notions of content which are defined in relation to the expression-form with which it constitutes a unit that functions as a sign in a language.[79]

As soon as a language starts drawing from the purport (i.e. applies its forms onto the purport), the purport is formed into substance. In other words, as soon as purport is viewed from the perspective of a particular language, it is given substance by that language.[80] This means that the phonological patterns which exist in the expression-plane and the abstract notions which exist in the content-plane shape from the purport particular expressions and contents:

- in the expression-plane, the pronunciation of a particular sequence of sounds, for instance by an individual or in a specific context. This particular sequence has the potential to become an instant manifestation: a manifestation of a sequence of sounds;
- in the content-plane, a particular content that can apply to a particular situation or context.

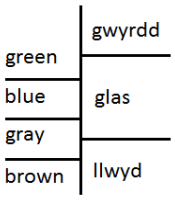
These particular expressions and contents thus have the potential to become instant manifestations, and as such they can become *parole*, which Hjelmslev renamed *usage*. They are in fact the components of signs that really stand for something.[81] The generation of substance on both planes of the sign is necessarily a result from the shaping of the purport by sign-forms. Hjelmslev did not consider purport an actual part of the sign, and consequently did not allocate it an active role in his theory (hence the dotted lines in Fig. II2-13), but at the heart of this theory on the formation of signs lies his emphasis on the idea that it was by imposing the structure of the form-strata (*langue*) onto purport that a sign came to be constituted of an expression and a content that were both formed substances (*parole*).[82]

	Form	Substance	Purport
Content plane	***Content-form:*** Aspects of content defined in relation to other elements of content within one language, and in relation to an expression plane	***Content-substance:*** The 'meaning' of a sign in a particular context (*Semantics*)	***Content-purport:*** Amorphous, unformed thought mass
Expression plane	***Expression-form:*** *Phonology* Phonemes: sound-expressions defined in relation to other sound-expressions within one language, and in relation to a content plane	***Expression-substance:*** *Phonetics* The pronunciation of a sound sequence by a particular person, hic et nunc	***Expression-purport:*** Amorphous, unformed sound sequence

Fig. II2-14 The form-, substance-, and purport-strata within the content- and expression-planes of a linguistic sign. Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 379.

[78] This idea is analogous to De Saussure's relational concept of negative differentiation; the content- and expression-forms of a sign are defined in relational context with other signs. Cf. section a.3 above, and the example of the color-spectrum below.
[79] Hjelmslev, *Prolegomena* (1969), 54; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 377.
[80] *Ibid*..
[81] Hjelmslev, *Essais linguistiques*, 80-89; Barthes, *Elements of Semiology*, 17-18; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 384.
[82] Nöth, *Handbook of Semiotics*, 68-69. Hjelmslev was not the first to propose such a forming process. Von Humboldt had already argued that the matter of language consisted partly in sounds, partly in unformed thoughts, the sounds being formed by the 'Lautform', the thoughts by the 'Ideenform' or 'innere Form' of language. Nöth, *Handbook of Semiotics*, 68, referring to Fischer-Jørgensen in *Acta Linguistica Hafniensia*, 2. For further comparison between Hjelmslev and Von Humboldt, see also Trabant, 'Louis Hjelmslev' in Krampen et al., *Classics of Semiotics*, 89.

Every language shapes purport differently into formed substance. Hjelmslev argued that 'Just as the same sand can be put into different moulds', purport is shaped into formed substance by different moulds, i.e. structures or patterns of forms.[83] Therefore, each language consists of different linguistic signs. The forming process can be exemplified with the 'amorphous continuum' of the color spectrum. In the content-plane, every language acknowledges a particular number of colors, because it imposes its own conceptual boundaries upon the purport that is the color spectrum. In the expression-plane every language applies its own phonological patterns onto the spectrum, resulting in particular names for colors. Consider the differences between the linguistic signs that exist in modern English and Welsh to designate the following colors (fig. II2-15):



- 'green' in English is 'gwyrdd' or 'glas' in Welsh;
- 'blue' in English is 'glas' in Welsh;
- 'gray' in English is 'glas' or 'llwyd' in Welsh;
- 'brown' in English is 'llwyd' in Welsh.

Fig. II2- 15 The English and Welsh color spectra. Hjelmslev, *Prolegomena* (1969), 53.

The purport contains all potentials that are in the color spectrum: all potential contents of colors in the content-plane, and all potential expressions for colors in the expression plane. In the content-plane, the conceptualizations of color that exists in English (the content-forms) shape four different content-substances: the particular colors *green*, *blue*, *gray* and *brown*. In the expression-plane, the phonological patterns that exist in English shape four different expression-substances as particular designations: 'green', 'blue', 'gray' and 'brown'. Welsh, however, has different conceptualizations of color, and shapes three content-substances: the particular colors *gwyrdd*, *glas* and *llwydd*. In the expression-plane, it has formed the particular expressions 'gwyrdd', 'glas' and 'llwydd'. Because the content-substance of *green* in English is conceptualized partly by what Welsh perceives as *blue*, Welsh has formed two different signs for *green* with two different expressions. On the other hand, because the content-substance of *glas* in Welsh is conceptualized by what English perceives as *green*, *blue* and *gray*, English has formed three different signs for *glas* with three different expressions. In a similar way languages conceptualize and designate morphological classes in different ways. Some languages, such as modern English or modern Dutch, know only the twofold distinction between *singular* and *plural* in the content-plane (a distinction between 'singular' and 'plural', or 'enkelvoud' and 'meervoud', in the expression-plane). Others, such as Arabic or ancient Egyptian, impose a different notion of plurality on the purport of morphological classes, thereby producing further content-substances such as *duality*.[84]

Although Hjelmslev's account remained an abstract theoretical account which departed only from language as a linguistic sign, his model of the stratified sign can also be applied to a system of visual communication such as photography, in which each stratum adds significant information to the overall photograph:

[83] Hjelmslev, *Prolegomena* (1969), 52; cf. Nöth, *Handbook of Semiotics*, 68-69.
[84] Hjelmslev, *Prolegomena* (1953), 33 and (1969), 53; Nöth, *Handbook of Semiotics*, 69-70.

- The expression-form of a photograph would be the technique and style used in its production, such as realism, pop-art, portrait, sepia, or black and white;
- The expression-substance would be the actual, physical materials and adjustments used in production, such as the make and type of the camera, the sort of photographic paper, the objective used (e.g. fish-eye), or the exposure time used;
- The content-form would be the concept pattern, or genre, in which the photograph is taken, for instance documentary photography, travel photography, or commercial photography;
- The content substance is the actual photograph in a particular news article, for instance, as an actual instance of documentary photography; or at the World Press Photo as an actual instance of documentary photography; or in an advertisement as an actual instance of commercial photography; or in National Geographic Travel as an instance of travel photography;
- The purport would contain all potential photographs, in all potential styles and techniques in the expression-plane, and all potential contents in the content-plane.

Fig. II2-16 shows a photograph from the database Symbolizing Identity. The content-substance is the actual manifestation of the photograph in the research database (codified, in fact, in the URL link).
As a photograph taken for study, it belongs to the content-form of documentary photography. The form of expression had to be as realistic and clear as possible, capturing the details as they occur on the ostracon itself. The expression-substance consists of the actual materials and adjustments that were prescribed by such a realistic and clear style.

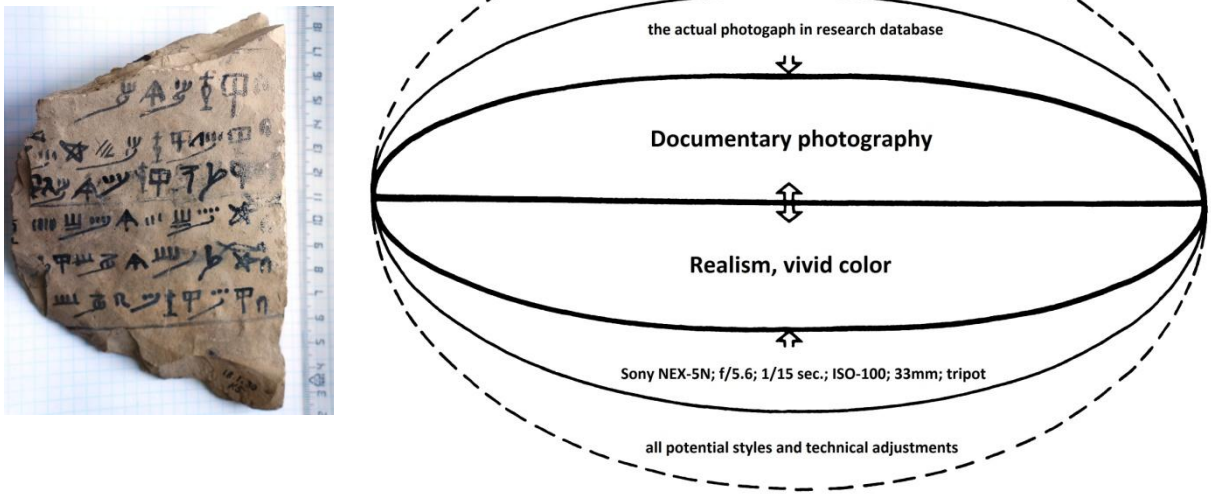


Fig. II2- 16 Study photograph of O.IFAO ONL 6536 and its analysis as a Hjelmslevian sign. Photograph by the author.

The Hjelsmlevian process of creating signs is in fact a process of categorization (by imposing concepts onto purport to create formed substantiated content) and of labeling (by imposing phonological sound patterns onto purport to create formed substantiated expressions). In other words, the form-strata categorize and label purport into substances which are proper to specific sign systems. Such semiological structuring processes can be related to cognitive hypotheses on linguistic relativism, such

as the Sapir-Whorf hypothesis, which argues that different languages encode different categories and that speakers of different languages therefore perceive and think about the world in different ways. Underlying such hypotheses is classification theory, or taxonomy.[85] As a theory belonging to the field of cognitive linguistics, it exposes the conceptual and deep structured system of wor(l)d-classification which is sustained by the members of a certain community or society and underlies their selection of those signs, which are considered suitable for visual communication. Goldwasser has applied the theory in a study on Egyptian determinatives, or classifiers, which add semantic information to an otherwise complete (pictorially and/or phonetically) written word, and therewith hint at the existence of conceptual categories that constitute the cognitive structure underlying ancient Egyptian hieroglyphic script. We explain this with an example (fig. II2-17):

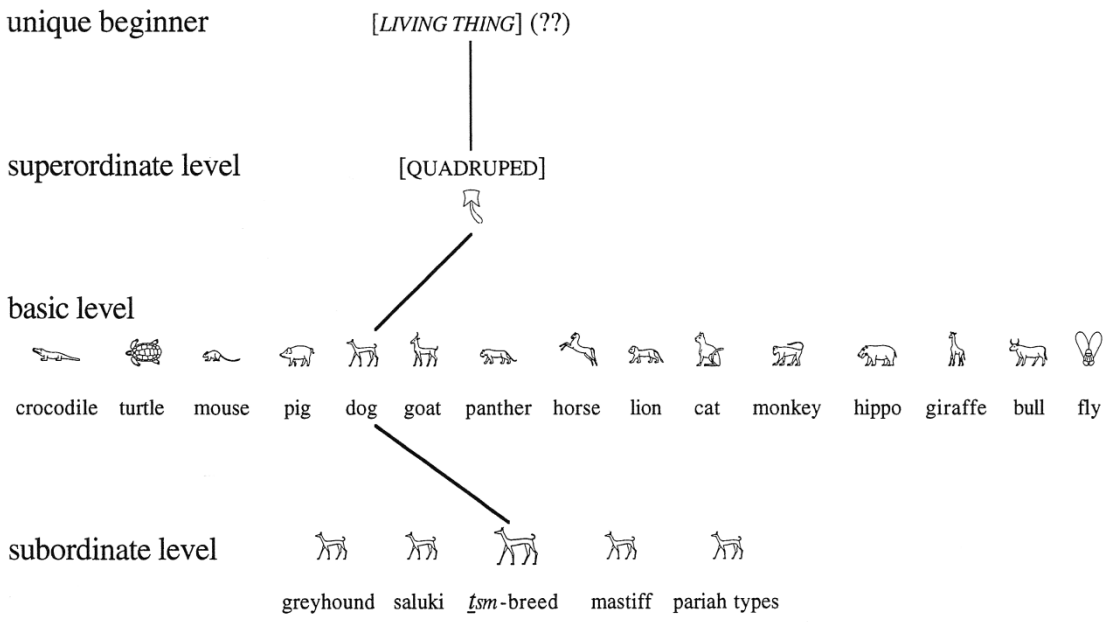


Fig. II2- 17 Levels of taxonomic classification. Goldwasser, *Prophets, Lovers and Giraffes*, 31.

The taxonomic levels that are found in classification theory are constructed hierarchically, from the most abstract term to the individual instance. This phenomenon is called 'hierarchy of categorization'. The levels include:

- a unique beginner, which is the highest, and most inclusive term of categorization, an abstract pattern such as [ANIMAL];
- a superordinate level, which in linguistic systems is often a collective or mass noun. In every taxonomy there is only one superordinate level, for instance [QUADRUPED];
- a basic-member level, the members of which show a high level of occurrence; they are the signs most frequently used in (visual) communication, for instance 𓃒, '*kꜣ*';

[85] Outlined by Rosch, e.g. in 'Cognitive reference points', *Cognitive Psychology* 7 (1975), 532-574; 'Cognitive representations of semantic categories', *Journal of Experimental Psychology: General* 104 (1975), 192-233; 'Principles of categorization', in Rosch & Lloyd (eds.), *Cognition and Categorization*, 28-49. See also Goldwasser, *Prophets, Lovers and Giraffes*, 27; Nöth, *Handbook of Semiotics*, 69; Harley, *The Psychology of Language*, 89-98; Fromkin, Rodman & Hyams, *An Introduction to Language*, 311.

- a subordinate level with signs that may, but do not necessarily, further specify the signs on basic level, and may refer to their particular instances and manifestations.

Every level in this taxonomic categorization is included in the one above in a 'set-inclusion' relation. This relation can be called an 'IS-A relation' (e.g. 'a bull IS A quadruped', 'a quadruped IS AN animal').[86] The greater the inclusiveness of a category in a given taxonomy, the higher the level of abstraction.[87]

The analogy with the Hjelmslevian process of sign-formation lies here: the unique beginner and superordinate levels are abstract patterns, forms, or abstract concepts on the level of the sign system with which the ancient Egyptians approached the purport, and attempted to make sense of it, i.e. classify it. The purport contained the entire repertoire of representations and contents, which could be used to represent the world, available to the culture. Applying the concepts of [ANIMAL] and [QUADRUPED] onto the purport, the Egyptians *selected* particular contents (e.g. *kꜣ*, *ssmt*, *rrj*, *mjw*, *kyw*, *db* or *mmj*)[88] and particular (hieroglyphic) expressions (e.g. , , , , , ,) to be *combined* as formed substances into a basic-level member *sign*. These basic-level member signs were prototypical signs, the most frequently used hieroglyphs which could act as representatives for a whole group. As such, they can be called 'signs elect' and compared to the determinatives and discussed in the previous section.[89] However, in addition to these prototypical basic-level members, the graphic variation of the hieroglyphic script allowed to now and then strengthen or nuance a message by selecting slightly different formed substances for content and expression, therewith replacing a basic-level member sign with a subordinate-level member sign. In Hjelmslevian terms, both basic-level member signs and subordinate-level member signs are selected formed substances combined into hieroglyphs, given form by the application of the conceptual abstract form-strata onto the purport. Fig. II2-18 visualizes the process: `

[86] In the next paragraph we will see that this is not the only relation that exists between determinatives and the word they classify. Cf. Goldwasser, *Prophets, Lovers and Giraffes*, 33-35.
[87] *Ibid*., 29-31.
[88] WB V, 94.7; WB IV, 276; WB II, 438.7; WB II, 42.1; WB V, 110.4; WB V, 433.14; WB II, 58.14.
[89] See p. 123 above. The term 'sign elect' refers to Goldwasser's 'signifier elect' in *From Icon to Metaphor*, 8-10, 31-34.

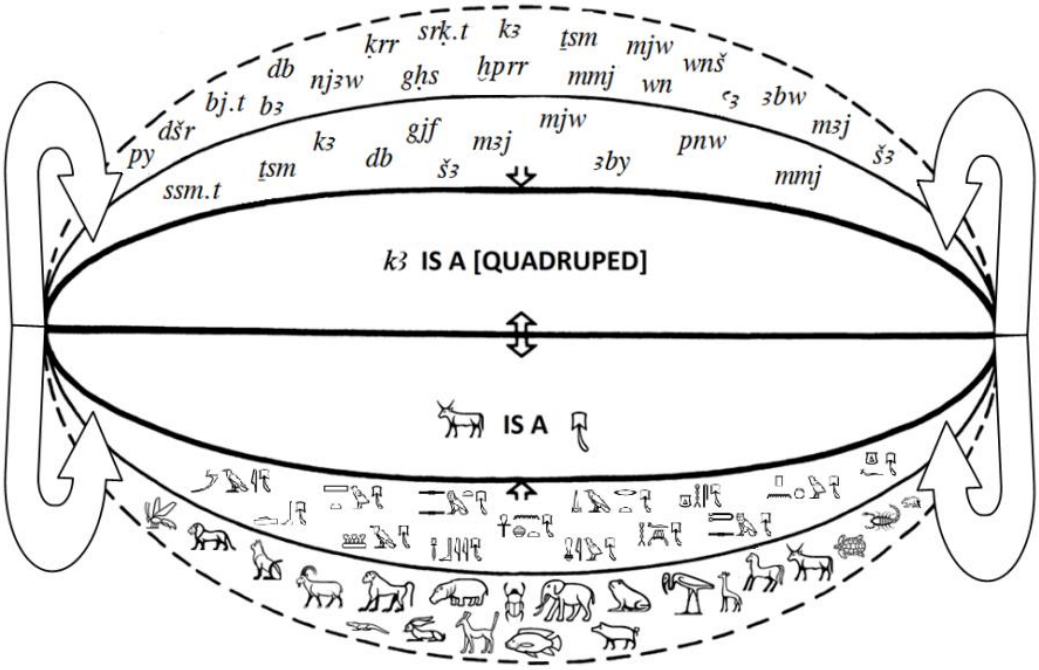


Fig. II2-18 Taxonomic classification of the superordinate category [QUADRUPED] as a Hjelmslevian process of sign formation. The purport contains all possible expressions and representations. The form strata of 𓌃 in the expression-plane and [QUADRUPED] in the content-plane select from it their basic-level members (i.e. particular instances of the form-strata), of which 𓃒, *kꜣ*, has become the formed substance.

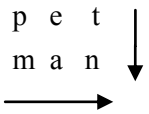
An accommodation of hieroglyphic signs in the model does lead to problems, because we need the phonetic and pictorial trails which Goldwasser introduced. Thus, it is true that ancient Egyptian had neither an expression- nor a content-form for the unique beginner. At least until the appearance of Demotic, it also did not have a content-form for the superordinate level [QUADRUPED], for which it also had no phonetic expression, but it did have a pictorial expression: the classifier 𓌃. All members belonging to this category may take this 𓌃-classifier, by means of which the script thus indicated the existence of a category that did inhabit the conceptual space of the ancient Egyptian world, but which had neither content-form nor phonetic expression. Goldwasser calls such cases 'covert categories', whose existence as a conceptual content can be inferred only from the visual script, while in language they were not labeled.[90]

Nevertheless, fig. II2-18 shows that from Hjelmslev's semiotic perspective on the cognitive process of sign formation it can be inferred that selection and combination are key processes: selection of content and expression in a cognitive categorization process of the purport, and their combination into signs used to represent the world. The processes of selection and combination automatically involve the addition of substance to the sign as shaped, or given form, out of the amorphous nebula of the purport. This was Hjelmslev's most important contribution to semiology on the level of the sign.

[90] Goldwasser, *Prophets, Lovers and Giraffes*, 31, 36-38.

b.2 Reconsideration of the sign system: syntagmatic versus paradigmatic relations

Hjelmslev agreed with De Saussure that it is merely by virtue of relations on the level of the sign system that the full meaning of signs can be analyzed.[91] It has been mentioned above that the form-strata of a sign are defined in relational context on the level of the sign system. This means that the formed substances which ultimately are the content and expression of a sign are also defined and imbued with value in relation to other signs. Thus, the formed substance *green*/'green' is defined in relation to the formed substances *blue*/'blue', *gray*/'gray', and *brown*/'brown'.[92] Among the relations that exist between signs on the level of the sign system Hjelmslev described two that have become particularly influential in later semiological works: the 'both – and' or conjunction relations, and the 'either – or' or disjunction relations.[93] He gave the following example:[94]



In the words 'pet' and 'man', along a horizontal axis, there is conjunction between the letters 'p', 'e' and 't', and between 'm', 'a' and 'n'. These are signs that co-exist in conjunction and are combined in a process of forming bigger signs, that is words. The same process can be imagined for words, which in conjunction are processed into sentences, or for sentences processed into even bigger units. Along a vertical axis there is disjunction between 'p' and 'm', between 'e' and 'a', and between 't' and 'n'. In each set, one of the members is selected: either 'm' or 'p', either 'e' or 'a', either 't' or 'n'. Different selections would result in different words ('mat', 'pen', 'men', 'pat', 'pan', 'met'). Hjelmslev called these sets of members paradigms.

The horizontal axis Hjelmslev designated as relational or syntagmatic axis; the vertical axis as correlational or paradigmatic axis. The axes are now also known as the syntagmatic and the paradigmatic dimensions of a sign system, represented as in fig. II2-19. The relation of conjunction in the syntagmatic dimension is similar to De Saussure's syntagmatic relations; the conjunctions to his syntagmas. The relation of disjunction in the paradigmatic dimension is similar to De Saussure's associative relations; the paradigms to his associative groups. A difference between the theories of Hjelmslev and De Saussure is that, while the latter granted special status to the syntagmatic dimension due to his focus on spoken language which, he argued, can only be uttered in linear syntagmatic sequence,[95] Hjelmslev argued that disjunction in the paradigmatic dimension is a necessary

[91] Hjelmslev, *Prolegomena* (1953), 13-14, 18-19; Hjelmslev, *Essais linguistiques*, 34.
[92] And in Whelsh, the formed substances *gwyrdd*/'gwyrdd', *glas*/'glas', and *llwyd*/'llwyd' are each defined in relation to each other.
[93] Hjelmslev, *Prolegomena* (1953), 22-25 and (1969), 36-41. The conjunction and disjunction relations are in fact specifications of three other relations of dependence between signs, which Hjelmslev calls 'functions'. They are 'determination' (one sign depends on another for its meaning, nature and function within the system), 'interdependence' (two signs depend on each other for their meaning, nature and function within the system), and 'constellation' (two signs do not depend on another for their meaning, nature and function within the system). An example of determination is the color green in a traffic light, which means 'proceed', but in that meaning depends on the color 'red' in the same traffic light; the color red, however, does not necessarily depend on green to mean 'stop' as it occurs in that meaning in many other traffic signs without green. An example of interdependence are the concepts of 'light' and 'dark': 'light' is only defined in relation to darkness and vice versa. An example of constellation are the pictograms and , which are part of the same pictographic system but do not depend on one another in meaning.
[94] Hjelmslev, *Prolegomena* (1953), 22 and (1969), 36.
[95] Linearity of the sign was one of De Saussure's 'principles of the sign'. De Saussure, *Course in General Linguistics*, 69-70.

precondition for conjunction in the syntagmatic dimension. It is the opposition between the members of a paradigm that is a precondition for the selection of one among them as part of a syntagma.[96]

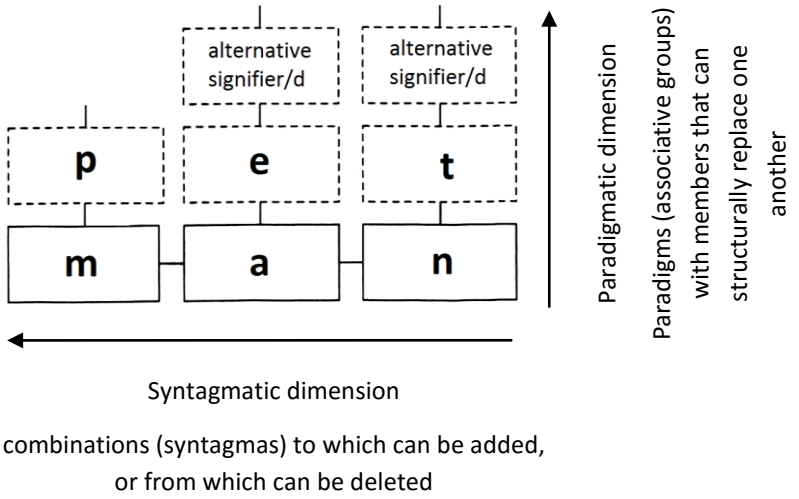
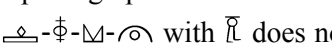


Fig. II2-19 The schema of syntagmatic and paradigmatic dimensions of a sign system. Adapted from Chandler, *Semiotics*, 84 (fig. 3.1).

Since the paradigmatic dimension has such a primary role in defining the value of a sign, it is of importance to provide a narrow definition of paradigms. Whereas De Saussure had argued that it is impossible to say in advance how many and which members an associative group will contain, Hjelmslev advocated that this could be defined by the commutation test. The members of a paradigm are signs which are all members of some defining category. In linguistic systems they are often members of grammatical groups (e.g. nouns, verbs, adjectives) or sets of consonants or vowels.[97] The members can structurally replace one another. Yet, the choice for one, therewith excluding or substituting others, shapes a specific meaning. The commutation test determines whether a change in the sign selected leads to a change in meaning. For instance, a first step is to select from a sign system a sign, which may be a consonant in a word or a noun in a sentence. Then, alternative consonants respectively nouns are considered. The effects of each substitution are evaluated in terms of how this might affect the sense made of the bigger sign thus formed (i.e. the word resp. sentence).[98] In the example of 'pet' and 'man' on the previous page, one might select the consonant 'm' and study how the meaning of the word is changed when 'm' is substituted with 'p' ('pan'), or with 'r' ('ran'), or with Ø ('an'). All three substitutions lead to words that are existent within the system of modern English language, and thus 'p', 'r' and Ø are all members of the paradigm from which 'm' is selected in order to convey the specific meaning of 'man'. In contrast, substitution of 'm' by 'g' (*'gan') results in a non-word; 'g' is therefore not a member of this paradigm. In similar manner, the members of the paradigm to which the signifiers 'a' and 'e' belong may be identified and evaluated; as also the members of the paradigm to which 'n' and 't' belong. The commutation test can also be applied in other systems of visual communication which are not couched in linguistic form, for instance

[96] Hjelmslev, *Prolegomena* (1953), 22-24.
[97] Chandler, *Semiotics*, 85.
[98] *Ibid*., 89.

photography: one may test how a change in the setting, or the light, or the objects or persons photographed changes the meaning of the photograph. When such a change is meaningful, then 'setting', 'light', 'objects' respectively 'persons' is a paradigm in the system of photography.[99] We return to this idea of commutation in photography in the next section on Barthes, where specific examples are given.

The commutation test thus involves the study of transformations in the paradigmatic dimension that result in transformations in the syntagmatic dimension and in overall change of meaning. Chandler mentions four basic transformations that the commutation test may study: substitution and transformation of members in the paradigmatic dimension, and addition or deletion of signs (e.g. selecting Ø in the paradigmatic dimension in the case of 'an') in the syntagmatic dimension. By means of the commutation test, the syntagmas and paradigms that are meaningful in a sign system in that they provide the structural context within which signs make sense can be identified.[100] In the system of identity marks from Deir el-Medina this idea is useful in interpreting clusters or sequences of marks and in identifying contemporaries or even more specific teams of workmen. The individual workmen are members of paradigms, and the clusters or sequences are syntagmas. Consider the clusters of marks on the ostraca represented in fig. II2-20. We can substitute marks from the cluster in photograph 'a', or add marks to it from the repertoire in photograph 'b', and see whether the new cluster is meaningful in the system. For instance, if we add the mark from the ostracon in photograph 'b' to the cluster in photograph 'a', we find that the new cluster  with does not occur in the mark material. The workmen with the mark is not a member of the paradigm of which the workmen with marks and are members. That conclusion supports the dates given to the ostraca: dynasty 18 for the ostracon in photograph 'a', and dynasty 20 for the ostracon in photograph 'b'. If the workman with mark was not a contemporary of the workmen listed on the ostracon in photograph 'a', he cannot have been a member of their paradigm, which is defined as consisting of workmen from dynasty 18.

When we look at two other examples in fig. II2-21, both dated to dynasty 20, we can assume that the workmen represented on both ostraca are all members of the paradigm which consists of workmen from dynasty 20. However, when we substitute the mark in the sequence in photograph 'a' by from the sequence in photograph 'b', and we compare the new sequence to the marks ostraca in general, we see that this sequence is not found. That is, all three marks do occur together once, on ostracon Turin CG 57008, but they are separated from each other and occur in different columns. That they are not found in sequence may be due to the fact that we do not have all records with marks, but it may also be due to the fact that the workman with mark was a member of the left-side-crew, while the workmen with marks and were members of the right-side-crew. In fact, all marks in photograph 'a' represent workmen from the right side, and all marks in photograph 'b' represent workmen from the left side. We then have at least two sub-paradigms for dynasty 20: workmen from the right side and workmen from the left side. Although workmen from both sub-paradigms 'right' and 'left' may occur on the same ostraca, meaningful sequential syntagmas are found especially within the 'right' and 'left' sub-paradigms. This conclusion has been decisive in the interpretation of damaged marks. For instance, the damaged mark in ostracon DeM 10121 (fig. II2-22) shows remains that could be interpreted either as the mark or as the mark . However, since all other marks on the ostracon

[99] Chandler, *Semiotics*, 89.
[100] *Ibid*., 84.

refer to workmen from the left side, and the mark 𓀀𓏏 belonged to the workman *Jmn-nḫt* (xxvi) who worked on the right side, we prefer restoring the remains to 𓀀𓏏, the mark which belonged to *ꜥ3-p3-ṯ3w* (i) from the left side.

a.

b.

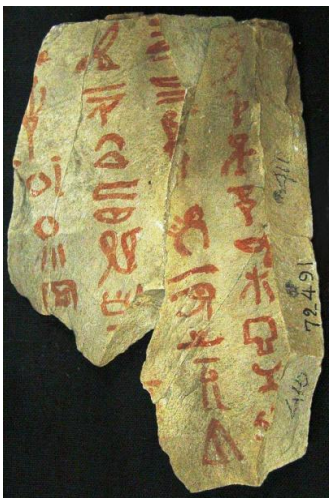
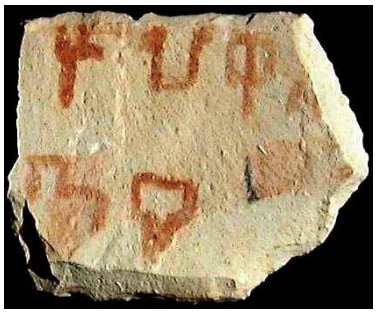


Fig. II2-20a. OWV 05 and **b**. Cairo JE 72491

a.



b.

Fig. 2II-21a. ARTP 99-029 and **b**. IFAO ONL 6217

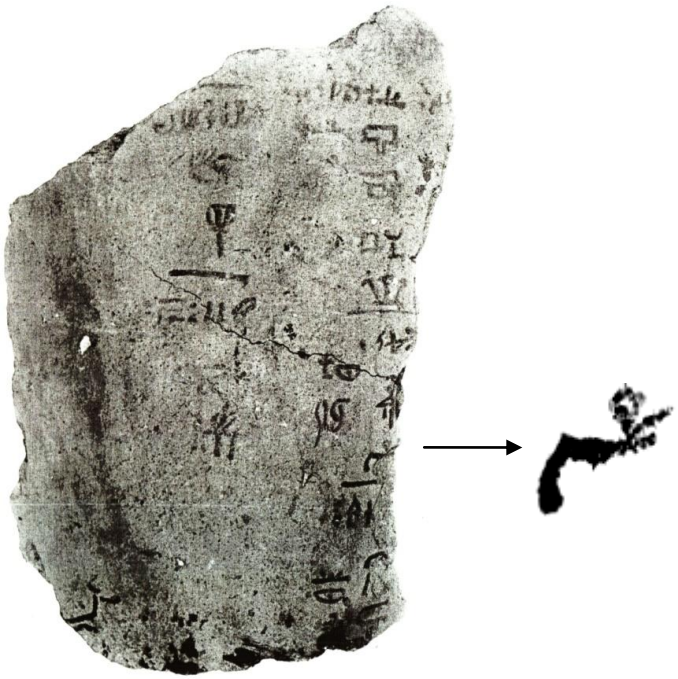


Fig. II2-22 DeM 10121

The ostraca are thus messages, the marks of which are selected form paradigms, which are delimited first of all by temporal boundaries. The members of these paradigms are workmen: we have a paradigm with workmen from dynasty 18, a paradigm with workmen from dynasty 19 and a paradigm with workmen from dynasty 20. These paradigms can be subdivided into sub-paradigms, for instance the sub-paradigms that have as members the workmen working on the 'right' side of the crew and the workmen working on the 'left' side of the crew. It is from these paradigms and sub-paradigms that the messages are composed; the sequences of these messages reflect the organization of the work.

b.3 Summary and discussion

Hjelmslev's theory centers around formal structures and relations in signs and sign systems, in which the processes of selection and combination have key roles. On the level of the sign, he argued for a stratified structure of the sign into three levels that are each separate stages in the process of sign-formation, and for the selection of expressions and contents to be combined into a sign. On the level of the sign system, he argued for a functional structure of sign systems characterized by a paradigmatic and syntagmatic dimension, and for the selection of signs from paradigms and their combination into syntagmas to form bigger signs. His most important contribution to semiology was the attribution of substance to signs, which naturally results on the level of the sign from the creation of signs out of the amorphous presemiological, unstructured purport. Traditionally, a sign was defined as something which stands for something else (*aliquid pro aliquo*); Helmslev had now projected this definition onto the content-plane stating that 'a sign is a sign for something' because 'the content-form of a sign can subsume that something as content-substance'.[101] The content-plane of a sign was now a 'Ding an sich' shaped out of the purport, and the expression plane was a 'sound as such' shaped out of the purport.[102]

Yet, we stumble across problems. Hjelmslev's model and theory still do not provide the possibility to distinguish between workmen who used the same identity mark at different periods, a problem which we saw with in the previous section. We can still not accommodate the referents. Although a sign now had substance, it still had no particular referent in the real world. The Hjelmslevian sign, as a substance, has the potential to refer to particular instances, but *it does not include these particular instances in the generation of its meaning*. This means that *Jn*(*j*)-*ḥr-ḫʿw* (i) and *Jn*(*j*)-*ḥr-ḫʿw* (ii) are still not part of the meaning of the marks and ; the theory does not perceive these marks as two different marks with different meanings. Furthermore, as we have noted, the theory does not include the pictorial and phonetic trails of signification, which are necessary in the analysis of signs from a pictorial script.

[101] Hjelmslev, *Prolegomena* (1953), 57. This principle became a dogma for the neo-Hjelmslevians, among whom are Greimas and Eco. For *aliquid pro aliquo*, see p. 106 above.
[102] Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 383.

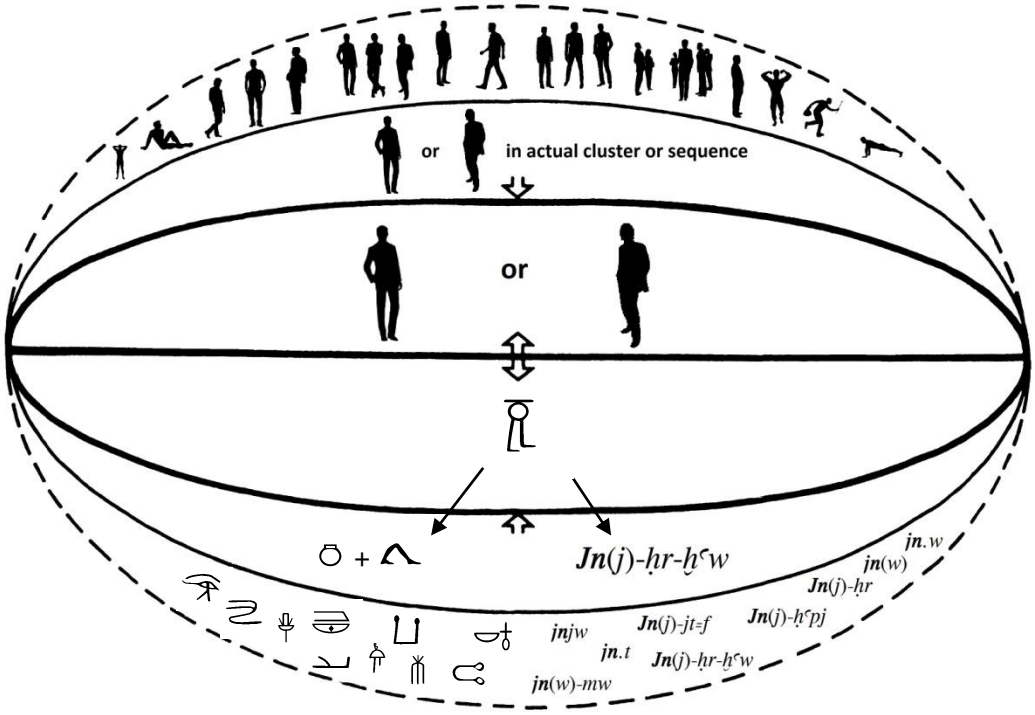


Fig. II2-23 The problem of accommodating referents in Hjelsmslev's sign model.

There are many things wrong with the model in fig. II2-23. First, we cannot distinguish between pictorial and phonetic value of the mark in the expression-plane, which makes the overall meaning of the mark ambiguous and the interpretation of the mark by a receiver a difficult and confusing task. Second, we cannot distinguish between *Jn(j)-ḥr-ḫʿw* (i) and *Jn(j)-ḥr-ḫʿw* (ii) in the content-plane. In the stratum of content-substance a distinction between the two men could be indirectly inferred when on the level of the system the two possibilities are considered on the basis of the particular occurrence of 𓀀 in an actual sequence or cluster of marks; that is, the specific content-substance which is meant (*Jn(j)-ḥr-ḫʿw* (i) or *Jn(j)-ḥr-ḫʿw* (ii)) can be inferred from an analysis of the position of each of these men within a sequence of marks that belong to other workmen, in the syntagmatic dimension. Thus, if these other workmen lived in dynasty 20 during the reign of Ramesses III and worked on the left side of the crew, we may infer that it concerns *Jn(j)-ḥr-ḫʿw* (ii). However, a model does not do a very good job in visualizing a system with the aim to ease its interpretation when it leaves the scholar to make additional analysis for each and every mark to complement it with such crucial information.

Nonetheless, in the first half of the 20th century Hjelmslev's theory was an inspiring reconsideration of the basis De Saussure had laid. It was only too abstract and too theoretical, lacking application to communication systems other than (spoken) language. It has already been mentioned that the processes of selection and combination were developed and given a more concrete role in the creation of meaning by signs and sign systems by Barthes and Jakobson, but on the basis of his stratified sign model Hjelmslev already laid out the abstract foundations for a theory of meaning including denotation and connotation. For reasons of clarity (and to avoid repetition), this topic is discussed in the next section, for it was Barthes who developed this theory and gave it concrete application in linguistic, as well as other systems of visual communication.

c. Semiology according to Barthes

Roland Barthes, a French semiotician and cultural and literary theorist (1915 – 1980), was much influenced by the works of De Saussure and Hjelmslev, but he did not follow them in considering semiology a general science of which linguistics was only one part. Rather, he was of the opinion that every semiological system has linguistic admixture. Nonlinguistic signs are always combined with a linguistic message, for instance films in cinema, images in advertisements, pictures in comic books and photographs in press photography. He argued that 'it is far from certain that in the social life of today there are to be found any extensive systems of signs outside human language'.[103] In the rare case that a nonlinguistic sign would not be accompanied by a linguistic message, linguistic admixture would still be present in its meaning, for Barthes argued that meaning does not exist if not designated by our language. In other words, the only existent concepts are those expressed through language: no sign system can exist independent of it.[104] While this is in fact an extreme version of the Sapir-Whorf hypothesis which states that the form of our language determines the structure of our thought processes, which has proven not to be true but to a very limited extent,[105] Barthes was one of the first to explicitly notice an intimate relation between linguistic and nonlinguistic elements in every sign system; that is, no sign system is purely nonlinguistic.[106]

Barthes thus considered semiology to be part of linguistics. It was from the linguistic model that semiology had to extract its basic analytical concepts, which were subsequently to be applied to all sign systems. He himself was the first to explicitly apply semiology to an analysis of cars, furniture, garments, even architecture and food. In *Image Music Text* (1977) he provided a semiological account of photography and advertisement, while in *The Fashion System* (1967) he made his most detailed and exemplary semiological analysis of the language of fashion.[107]

c.1. Barthes' structural program

The concepts which Barthes extracted from linguistics were heavily influenced by the works of De Saussure and Hjelmslev. He proposed a program for systematic research in semiology, in which he made four selected concepts the core of four succeeding levels of structural analysis. Each level was characterized by one of the following dichotomies:

- *langue* versus *parole*;
- *signifier* versus *signified*, or *expression* versus *content*;[108]
- *denotation* versus *connotation*;
- *syntagmatic* versus *paradigmatic dimension*.

[103] Barthes, *Elements of Semiology*, 9.
[104] *Ibid*., 9-11; Nöth, *Handbook of Semiotics*, 312-313.
[105] Several psycholinguistic experiments have demonstrated that language merely has an indirect influence on cognition and only with regard to a few selected cognitive processes. Moreover, it has been mentioned in the previous paragraph that Goldwasser demonstrated the existence of concepts without representation in ancient Egyptian script ('covert concepts'). Harley, *The Psychology of Language* (2008), 89-98; Goldwasser, *Prophets, Lovers and Giraffes*, 30-31, 36-37.
[106] Cf. the argument by Elkins in the Introduction to this dissertation, pp. xviii-xix.
[107] Barthes, *Image Music Text*; ibid., *The Fashion System*; ibid., *Elements of Semiology*; Nöth, *Handbook of Semiotics*, 312.
[108] In his early work he used the Saussurean terms *signifier* and *signified*, while in *Elements of Semiology*, for instance, he used *expression* and *content*.

In the first two levels he mainly followed Saussure and Hjelmslev. He considered the dichotomy of *langue* versus *parole* an essential feature of linguistic analysis and argued how divergent systems of visual communication could be approached by determining, first, the set of differential rules or conventions which are necessary to communicate effectively and, second, the possibilities for the varied individual applications of those rules.[109] In the individual applications he particularly paid attention to the social usage of signs,[110] which became important in his further analysis of sign systems, especially in his ideas on connotation and ideology (see below). On the second level of *signifier* versus *signified* Barthes adopted the theory that signs consist of form and substance,[111] but he furthermore emphasized that substance was material. Although he agreed with De Saussure that the signified was first and foremost a non-material 'mental image', he acknowledged that the signifier at least needs some kind of matter to provide a necessary support for signification: 'the substance of the signifier is always material (sounds, objects, images)'.[112] He introduced the term 'typical sign' to designate groupings of signs with similar materiality: the verbal sign, the graphic sign, the gestural sign, and so forth.[113] He furthermore reconsidered the Saussurean idea that the link between signifier and signified is arbitrary. Concerning linguistic signs, he argued that the association between signifier and signified is never arbitrary, for no person is free to modify it. Rather, the association is *unmotivated* (although a lack of motivation in linguistic systems is only partial, for there are degrees of motivation in onomatopoeia and derivational signs).[114] Concerning semiological signs in general, he noted that *different degrees of motivation could co-exist in the signs of one single system*. For instance, the movements of honey bees to indicate the location of food ('the waggle dance') consist of a straight line (sign 1), which is highly motivated by analogy with the direction of food nearby, and of a figure-of-eight shape (sign 2), a figure that is less motivated and refers to food in more distant places.[115] This co-existence of various degrees of motivation within a single sign system is exactly the characteristic of systems of visual communication that was noted in Part I. It is explained by the greater or lesser extent to which semiotic systems show admixture with linguistics: the signs located in or near the domains of Writing and geometrical Notation generally show a lesser degree of motivation than signs located in or near the domain of Picture. With this co-existence of various degrees of motivation Barthes shifted de anthropocentric focus on human language to communication systems in broader

[109] Barthes, *Elements of Semiology*, 23-31.
[110] He adopted Hjelmslev's reinterpretation of *parole* as a concept of more social nature under the name 'usage'. *Ibid*., 13-25.
[111] He did not, however, let these strata play a direct fundamental role in his theories. Especially in his theory of connotation, derived from Hjelmslev, Barthes ignored the strata of form and substance. That is, in *Mythologies* (first published in 1957) he still attempted to assign form and substance a place and role, but in his later work, *Elements of Semiology* (first published in 1964) he left the strata out of the discussion. Indeed, it becomes clear that, as deep underlying theoretical structures that derive from pure linguistic analysis, they are not directly relevant to Barthes' simplified version of Hjelmslev's theory, which has much wider semiological application. In order not to complicate matters, to not repeat Hjelmslev, and to keep to the point we will not go into Barthes' earlier remarks on form and substance, but merely mention that the sign was considered to have substance, which should be clear already from the fact that semiology, for Barthes, had so many practical and particular applications. Barthes' theory of denotation and connotation is discussed below. Barthes, *Elements of Semiology*, 38-48; Nöth, *Handbook of Semiotics*, 310.
[112] Barthes, *Elements of Semiology*, 47, 33-34.
[113] *Ibid*., 47.
[114] *Ibid.*, 50-51.
[115] *Ibid.*, 52. Barthes argued that the figure-of-eight shape is unmotivated, but in fact the middle axis of the figure-of-eight refers to distance as well. The whole figure is only less motivated than the direct straight line of sign 1. A lot of literature can be found specifically on the dance of the bees, first and foremost Frisch, *The Dance Language and Orientation of Bees*, for which Karl von Frisch was awarded the Nobel Prize in 1973. See further e.g. Nöth, *Handbook of Semiotics*, 150-151 and Harley, *The Psychology of Language*, 54-55.

context. The nature of the various degrees of motivation was further worked out particularly by Peirce in his famous classification of signs (section 2).

c.2. Deeper structural analysis

Barthes' most important contribution to semiology, and most relevant in the present discussion on the transmission of meaning through signs, concern his third and fourth levels of structural analysis, to which we now turn.

The dichotomy denotation versus connotation

Whereas De Saussure had focused on signs that convey a single layer of meaning,[116] Hjelmslev had theorized that the interaction between the content and expression of a sign could recur at various levels of abstraction. He suggested the possibility that a sign, or in extension a semiotic system, could have multiple layers of meaning, which he called denotative and connotative.[117] However, he was only concerned with forming a theoretical framework for analyzing language and did not investigate the possibilities of such layers in further detail. Barthes took up the theory, developed it, and applied it to semiotic systems beyond language.[118]

He argued for the existence of two different orders in the production of meaning:[119]

- a first order, in which a sign simply consists of a signifier and a signified and produces denotative meaning. This is, in fact, De Saussure's sign model proper. Denotative meaning is understood as a primary, natural, literal, objective, pure, and universal meaning, an 'Edenic state', as Barthes said;[120]
- and a second order, in which connotative meaning is produced. A connotative sign uses a denotative sign as its signifier to which an additional signified is attached. Connotative meaning is a higher order of meaning, which applies to a particular situation and relates to a specific context.[121]

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[116] Although it appears from unpublished works that he did think about the possibility of other signifying processes working beneath or alongside the apparent signs. Goldwasser, *From Icon to Metaphor*, 37.

[117] Hjelmslev, *Prolegomena* (1953), 73, 116-119 and (1969), 114-124; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 370.

[118] Barthes, *Mythologies*; ibid., *Elements of Semiology*, 89-94; ibid., *Image Music Text*; ibid., *The Fashion System*; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 372-375; Nöth, *Handbook of Semiotics*, 310-313.

[119] Chandler, *Semiotics*, 138-140; Barthes, *Mythologies*, 110-114; Barthes, *Elements of Semiology*, 89-94. Two notes on terminology must be made. First, Barthes spoke of two staggered semiological *systems*: a primary and a secondary 'system'. I avoid the term 'systems', however, as it may confuse the reader with the term system already in use to distinguish the level of the sign and the level of the sign system. As we will see in the following, the theory of denotation and connotation finds application on both the level of the sign and the level of the sign system. Second, Barthes did not speak of 'meaning' as the product in the connotative order. 'Meaning' is the term reserved particularly for the first-order, denotative meaning. For the second-order connotative meaning Barthes rather used the term 'signification'. Again, I avoid the term 'signification' here in order not to confuse the reader with the Saussurean use of the term. Cf. Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 373; Barthes, *Elements of Semiology*, 89-90; Nöth, *Handbook of Semiotics*, 310-311.

[120] Barthes, 'Rhetoric of the Image' in Barthes, *Image Music Text*, 42.

[121] One of the most important differences between the theories on denotation and connotation as proclaimed by Hjelmslev and Barthes is that the notion of situation-specificity was not relevant in Hjelmslev's definition of the connotative sign. For Hjelmslev, connotation was simply another dimension of the sign. However, we will see in this and the following paragraphs that situation-specificity is in fact important in connotation. Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 375.

The first order with its primary meaning is an element of the more comprehensive connotative meaning in the second order. The denotative sign it produces becomes a mere signifier in 'un système sémiologique second', the product of which is the connotative sign (fig. II2-24).[122] Put differently, connotative meaning is generated in an order of meaning production that is constructed in a semiological chain with a denotative meaning at its base.[123] Barthes renamed the signifier of the connotative sign (i.e. the sign of the denotative order) connotator.

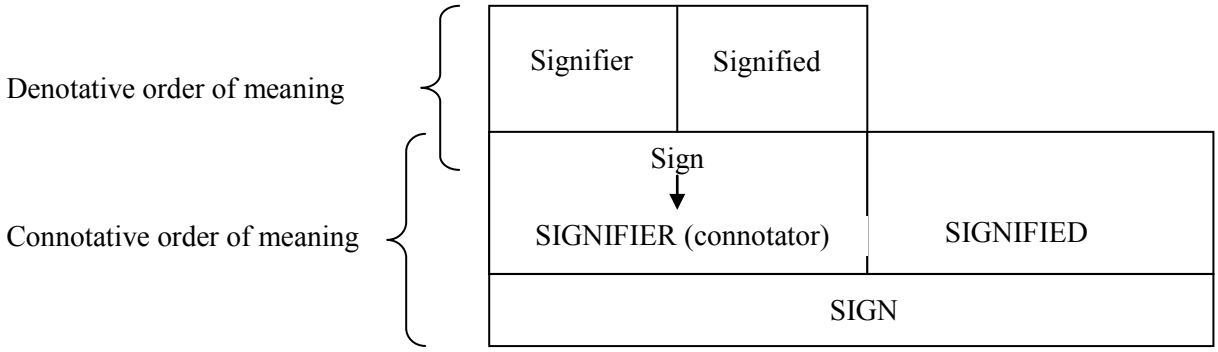

Fig. II12-24 Barthes' scheme of denotation and connotation. Signifier and signified together form a sign in a primary order of meaning production. This sign becomes a signifier ('connotator') in a second order of meaning production. Combined with a new signified it forms a connoted sign. Based on Barthes, *Mythologies*, 113.

In his early work (especially *Mythologies*), Barthes related connotation to what he referred to as myth. Whereas we usually associate myths with 'classical fables about the exploits of gods and heroes',[124] Barthes understood myth as the dominant ideologies of his time. The signified of the connotative sign he viewed more broadly as 'a fragment of ideology',[125] and connotation on the level of an entire system as mythology or ideology, because myths and ideologies contain deeper levels of meaning which presuppose a significant consciousness existing already as a primary meaning.[126] Barthes considered the analysis of signs, and as such the dismantlement of myths and ideologies, a tool in the scientific fight against cultural and social dominance by the bourgeoisie and the mass media: they create and enforce their own ideologies by attempting to give their messages a foundation in a natural, primary underlying meaning. In other words, they attempt to enforce their ideologies by making them seem obvious, and logical on the basis of a primary understanding, therewith concealing but suggesting the 'hidden messages'

Fig. II2- 25 The cover of Paris-Match. From Chandler online (http://visual-memory.co.uk/daniel/Documents/S4B/sem06.html).

[122] Barthes, *Mythologies*, 113.
[123] *Ibid.*; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 373.
[124] Chandler, *Semiotics*, 143.
[125] Barthes, *Mythologies*, 138; Taverniers, 'Hjelmslev's semiotic model of language', *Semiotica* 171 (2008), 373.
[126] Barthes considered mythology and ideology metasemiotic sign systems of a higher order, in which a mythical or ideological metasign has as its signified (or content-plane) a complete sign system. As a sign, it speaks about a sign; as a sign system it speaks about a sign system. The clearest example of a metasemiotic sign system is linguistics: when we use language to speak or write about a language, the language we use to explain is a metalinguistic system. Mythology or ideology could be considered a metasemiotic system in that it has society as its signified. Barthes, *Mythologies*, 110-114; Barthes, *Elements of Semiology*, 89-90, 92-93; Nöth, *Handbook of Semiology*, 310-311.

they actually want to convey.[127] As an example of these orders of meaning will serve the famous and often cited cover of the French magazine *Paris-Match*, published in the mid-50s (fig. II2-25 above). The boy is the sign. The primary signifier is the photograph of him on the cover of the magazine. It denotes a black African boy in French uniform in the act of salute, 'with his eyes uplifted, probably fixed on a fold of the tricolour'.[128] The denotative meaning consists of the photograph of the boy denoting this signified. But beyond this denotative meaning there is a second, implicit signified of France being a great empire with 'all her sons, without any colour discrimination, faithfully, serving under her flag'.[129] The denotative sign as a whole, the photograph of the African boy in salute, becomes connotator in a second order of signification, forming a connotative sign with this implicit signified of Frenchness and militariness.[130] The full message of the photograph is then analyzed in these two orders of meaning. But the connotative message relates to a specific historical context. It functions as a myth in this context as it represents a fragment of the ideology of French imperialism, which implicitly justifies colonialism. In the words of Barthes, 'there is no better answer to the detractors of an alleged colonialism than the zeal shown by this Negro in serving his so-called oppressors.'[131] Barthes considered it the main task of semiology to offer a method to see through the dominance of such ideologies and put them up for discussion.

The dichotomy syntagmatic versus paradigmatic dimension[132]

Thus, it was important to be able to analyze layers of denotative and connotative meaning and to identify ideology on the level of the sign system as well. Barthes adopted from De Saussure and Hjelmslev the idea that messages are built from a combination of signs which are taken from sets of structurally substitutable variables; that is, they are built in the syntagmatic and paradigmatic dimensions. But he integrated his theory on denotation and connotation with this idea and accommodated it in the scheme of fig. II2-26:

[127] Thirlwell in Barthes, *Writing Degree Zero*, vii-xxii; Nöth, *Handbook of Semiotics*, 311.
[128] Barthes, *Mythologies*, 115.
[129] *Ibid.*, 115.
[130] *Ibid.*; Nöth, *Handbook of Semiotics*, 311.
[131] Barthes, *Mythologies*, 115.
[132] Barthes called this dichotomy 'syntagm versus system', for his term for the paradigmatic dimension was 'systemic' (*Elements of Semiology*, 59). We will, however, retain the terms paradigm and paradigmatic dimension, because these terms have become generally accepted, especially under influence of Jakobson (see section 1.d).

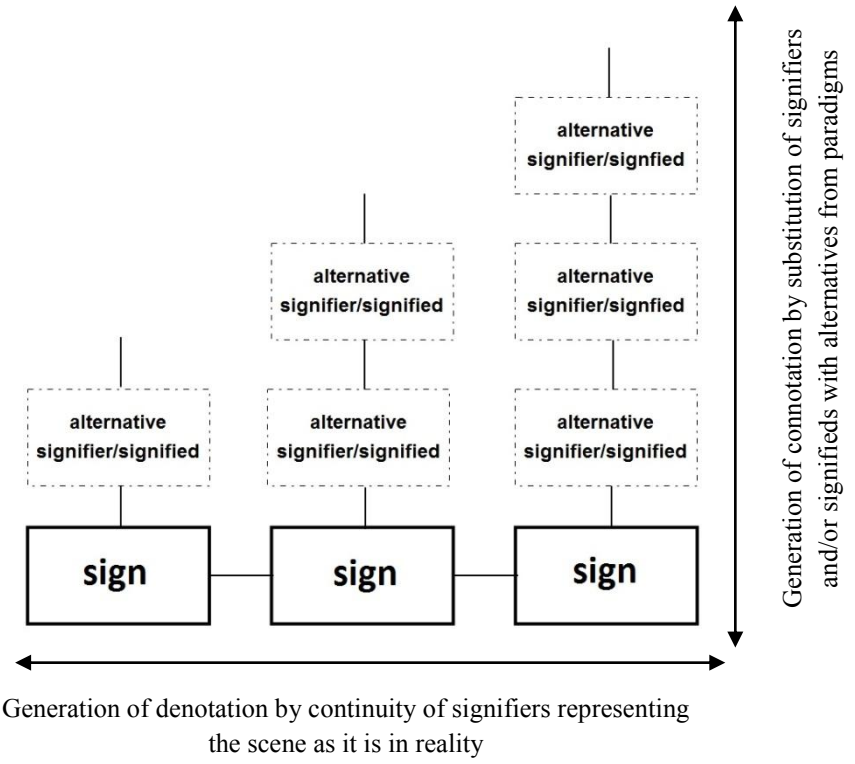

Fig. II2-26 The syntagmatic and paradigmatic axes as the generators of denotation respectively connotation. Adapted from Chandler, *Semiotics*, 84 (fig. 3.1).

Barthes described syntagms as sequences of continuous signs. Their continuity is analogous to reality. The reason that denoted signs have a literal, objective and universal meaning is, according to him, precisely because they represent reality. The continuity of denotative signs in a syntagm is analogous to reality or, rephrased, denotative signs in a syntagm are read continuously analogous to reality. Syntagms are thus denotative signs, and denotation is found in the syntagmatic dimension.[133] Paradigms, in contrast, Barthes described as groups of discontinuous signifiers and signifieds. They offer alternatives that interrupt the representation of reality in the syntagmatic dimension, and they substitute part(s) of it. Barthes argued that substitution from paradigms creates connotation: connotative signs are discontinuous in that they interrupt denotation in order to convey a context specific meaning by drawing upon alternatives. Thus, in this view, the generation of connotation takes place among alternatives which are associated in the paradigmatic dimension.[134]

Barthes explains this most clearly in the system of photography. In his papers 'The Photographic Message' and 'Rhetoric of the Image' (*Image Music Text* (1977)) he argues that a photograph as a collection of signs is one of the best examples of a message with pure denotative meaning. Due to its mechanical instead of human recording (such as is the case in drawing or painting) it transmits pure, literal, objective reality.[135] The photograph *is* not reality, but it is its 'perfect analogon' in that the continuation of the elements in the photograph (i.e. the signs of which it is built) is analogous to the

[133] Barthes, 'The Photographic Image' in Barthes, *Image Music Text*, 18, 20; Barthes, 'Rhetoric of the Image' in *idem*, 34-35.
[134] Barthes, *Elements of Semiology*, 91; Barthes, 'Rhetoric of the Image' in Barthes, *Image Music Text*, 34-35.
[135] Barthes considered 'mechanical' to be a 'guarantee of objectivity'. Barthes, 'Rhetoric of the Image' in Barthes, *Image Music Text*, 43-44.

scene in reality.[136] The combination and continuity of these signs is a pure and literal recording of the real scene. In order to move from reality to the photograph, it is not necessary to decompose the scene and to divide it up into significant units. The scene does not need to be coded, constructed or formed in order to be represented in the photograph; it can simply be captured as it is. This part of the photograph's message consists of continuous denotative signs with reality as their signified in the syntagmatic dimension.

However, this representation of reality is affected in several ways. First, various factors endow the photograph with stylistic values: choices made regarding exposure, angle, color scheme, framing, distance, focus and speed – aspects which give the photograph substance – have immediate effect on its message, as does image processing afterwards. Second, cultural associations are attached to signs such as objects, postures and gestures. Such associations influence the photographer at the moment he presses the shutter button: he may be unconsciously influenced by his own cultural values, or he may intentionally use or accentuate certain association (e.g. through one of the stylistic factors) in order to convey a specific meaning to an intended public. But the associations also influence the people who receive and interpret the photograph according to a traditional stock of signs irrespective of the photographer, possibly years after the photograph was taken when cultural values may have changed. All these stylistic factors and associations on the part of the photographer as well as on the part of the public, at the moment the photograph is produced as well as at the moment it is received and interpreted, generate connotation.

A photograph, then, consists of two messages according to Barthes:

1. a denotative message in which the linear combination of signs represents reality;
2. and a connotative message, which is conveyed by a certain treatment of the photograph: the choice from stylistic paradigms (e.g. exposure, color scheme, framing, distance, and so forth) and from paradigms that contain a variety of alternative objects, postures and gestures which connote certain cultural values and associations.

c.3. Discussion

There are two problems with Barthes' theory of denotation and connotation. First, as mentioned, in his early work Barthes presented denotation as a pure, literal, objective and universal meaning and connotation as a symbolic, ideological meaning that is built upon denotation. Whereas denotative signs and systems generate basic, natural, clear-cut meaning, connotative signs and systems rather generate overall, deeper, global, and diffuse meaning on a higher level, which comes close to culture and society from a macro-historical perspective (ideology). But Barthes later abandoned this hierarchy. He no longer considered denotation as meaning free from ideological aspects. This, he said, is only an illusion, for no sign can be purely denotative. Signs with what we call denotative meaning simply have a broader consensus in that they are less situation-specific than signs with what we call connotative meaning, but they never lack connotation. The usage of 'denotative signs' within society alone endows them with connotation: the ideologies of societies, (sub)cultures, communities. Thus, phrased by Chandler, 'denotation is just another connotation'.[137] It is no longer considered an autonomous state of the sign.

[136] Barthes, 'The Photographic Image' in Barthes, *Image Music Text*, 17.
[137] Chandler, *Semiotics*, 138.

The dichotomy denotation versus connotation is, then, in dubious state. If denotation is 'just another connotation', and there is thus only connotation, the question rises what exactly connotation entails. Are there various kinds and grades of connotation? Consequently, the scheme of fig. II2-24 is also in dubious state, for instead of a strict hierarchy from denotation to connotation, how can a more nuanced interpretation of connotation be visualized? With the disintegration of the dichotomy, the concept of connotation loses its meaning as being oppositive to denotation, and remains rather unspecified.[138]

It is ironic that we can exemplify the problem with exactly the visual medium Barthes used in showing the difference between denotation and connotation. A photograph can never be a perfect analogon of reality, if only because two stylistic paradigms (framing and distance) immediately cut it loose from reality; a photograph is by nature a selection. The framing and size of this selection is determined by the choice of lens and the technical aspects of that lens (zoom, standard focal distance). The cover of the Dutch version of the book *People like us: Misrepresenting the Middle East* (2009) by journalist Luijendijk (fig. II2-27) shows how the mass media can present 'reality' as a myth only by means of a photograph, of which the interpreter has no idea that it is only a selection. The photograph suggests active demonstrations, while in fact Luyendijk describes the situation as rather quiet.[139] In another article he criticizes the news-making media in general, illustrating the problem with the following report:

Fig. II2-27 Cover of the book by Luyendijk. The book offers a perfect insight into how meaning is created and conveyed by the mass media; and of how this meaning may be a distorted picture of reality. It illustrates the need for a semiotic consciousness with the public.

'It was the autumn of 2000 when my newspaper asked me to cover the Palestinian intifada. ... Before taking off from my home in Beirut that morning I turned on CNN and saw the sort of footage everyone associates with the conflict: stone throwing boys. Israeli soldiers taking aim, ambulances rushing off, angry Palestinians shouting slogans, and then a well-groomed reporter saying something like 'hopes for peace seem more distant than ever'.

There are no direct flights from Lebanon to Israel and I had to fly to Jordan and then take a taxi to Ramallah. In all this is an eight-hour trip, enough time to work up some existential anxieties. So there I was, finally, in Ramallah, only to find a city like any other. Children with rucksacks on their backs walked home from school, taxis made their rounds and in the market tomatoes were on sale. People, I asked a pedestrian almost angrily, where are the stone throwers? The man nodded kindly and said: 'Very easy. You follow this street all the way to the crossing, turn left, and then straight on till the City Inn Hotel. There you will find the stone throwers.' He paused for a second and added: 'After two p.m.' And indeed, when the next day I went to City Inn Hotel, around two o'clock both Israeli army vehicles and Palestinian school boys showed up. Soon the stone throwing started, producing exactly the sort of images I had seen on CNN that morning.

News is by definition the exception to the rule. The quiet rest of Ramallah did not make the news, because it obviously wasn't news. The effect of this filter or omission was that the whole city, if not the whole region, seemed on fire. It patently wasn't. ... what happens when you present exception after exception to an audience that has no picture of what 'the rule' in Middle Eastern societies may be? One may blame the constant media stream of negative images and stories from the Middle East on ideology.'[140]

[138] Jakobson, especially, emphasized that signs gain meaning in binary opposition, by being whatever the other is not. See already De Saussure's suggestion on p. 120 with note 46.
[139] Luyendijk, *Het Zijn Net Mensen*, e.g. 23, 42. Translated in English as *People Like Us: Misrepresenting the Middle East*.
[140] Luyendijk, 'Beyond Orientalism' in *International Communication Gazette* 72(1) (2010), 10-11.

The idea of constant active demonstrations is an illusion; the scenes in the media are not analogies of reality, but highly suggestive selections.[141]

There are two further reasons why photography can never be pure denotation, capturing a scene as it is. On the one hand, photographic technique has its limitations. By means of tools such as exposure time, shutter speed, white balance or color temperature we can attempt to artificially reproduce the incidence of light, the range of coloring, hues, tints and shades; professional photographers can come very close. But the camera remains subordinate to what we perceive as reality through the human eye.[142] On the other hand, the choice of objects or persons photographed immediately connotes a photograph. An example is the choice for the African boy in fig. II2-25: skipping an alleged denotative level as 'just any boy', the choice for him immediately connotes the message of the photograph. Consider also another example given by Barthes in 'The Photographic Message' (fig. II2-28):[143]

Fig. II2-28 Press photograph of John F. Kennedy for the 1960 election.

This is a press photograph for the 1960 election, showing Kennedy sitting at a table. Barthes argues that his pose ('half-length profile shot, eyes looking upwards, hands joined together') connotes the photograph. The signs of this pose, selected from a paradigm of signs constituting alternative poses, signify prayer, at least in the tradition and culture of the West. This photograph, Barthes argues, is therewith connoted in that it expresses Kennedy's purity and spirituality.[144] We would add faithfulness and devotion, two qualities which are also associated with prayer and which are certainly fit for a presidential candidate. One can even go further and add more layers of connotation. Thus, connoted meaning is transmitted by:

- the plain background which focuses all attention on Kennedy (a choice from the framing paradigm);

[141] We do not intend to minify the problems in the Middle East, but simply to put them into perspective.
[142] And even that is only a subjective and selective reality in comparison to the reality of physics, for instance.
[143] Barthes, 'The Photographic Message' in Barthes, *Image Music Text*, 22. The photograph is taken from http://sadievislit2014.wordpress.com/2014/02/12/photographic-measures/.
[144] Barthes, 'The Photographic Message' in Barthes, *Image Music Text*, 22.

- the wooden table which, together with prayer, signifies a purity, serenity and simplicity that can be associated with monastic life of pure devotion (a choice from the paradigm of objects);
- the suit worn by Kennedy, which signifies seriousness and importance (a choice from the paradigm of dress);
- the color scheme of the photograph, which is typical for the 1960s and therewith signifies that period (a choice from a color scheme paradigm);
- and, finally, the incidence of light. The photographer chose a soft, diffuse light to shine on Kennedy's front. Certainly, he is the subject, but in this context of prayer the light on his face and hands may also signify approval by God. The photographer, consciously or subconsciously, kept this signification modest. He could have chosen the option of a fixed spotlight and create the effect of revelation and enlightenment as encountered in Western Renaissance painting, and therewith increase the level of connotation (fig. II2-29). In the cultural and religious setting of that period it would have been good promotion. In the politics of the 20th century, however, it would have given the photograph, and Kennedy, an obsolete religious appearance, creating the impression of a European situation before the separation of church and state. That cannot have been the intended meaning of a press photograph in the Americas of the 1960s. The present choice for subtle light may suggest approval and enlightenment, but mainly leaves such an interpretation to the public.

Fig. II2-29 Saint Bridget's Eucharistic Vision, Revelations of Saint Bridget of Sweden. Napels, Italy, last quarter of the 14th century. The Pierpont Morgan Library & Museum, Manuscript MS M. 498.

Thus, we find here different layers and nuances of connotation. But these are not built upon a primary denotative meaning. There is no primary, objective, literal scene of a 'man sitting at a table'. That there would be such a scene, is only an illusion. Before it could gain meaning, it is already reworked upon; the choice of man alone, i.e. Kennedy, who is immediately associated with American politics of the early 1960s, prevents that such a scene can exist. It only gains meaning through values and associations that result from immediate selecting. It is, in fact, the primacy given to the paradigmatic dimension already by Hjelmslev, that prevents the existence of denotation.[145]

There we stumble upon the second problem with the Barthesian theory on denotation and connotation: the idea that the generation of connotation takes place only in the paradigmatic dimension. If denotation cannot exist since it is immediately connoted by selections in the paradigmatic dimension, than connotation must also be present in the syntagmatic dimension. But what kind or grade of connotation is that, and how does it partake in the generation of meaning?

In sum, the Barthesian theory on denotation and connotation was very important for the idea that there are multiple layers of meaning which are generated and conveyed by signs, not only linguistic signs,

[145] Cf. section 1.b above.

but semiological signs in general. These layers are dependent on stylistic choices and associations, which may be intentional or not, may or may not be imposed by the photographer and/or interpreted by the public, and which may be highly culture- and tradition-bound, what makes the full meaning of signs and sign systems accessible only by members of the respective culture and tradition. But the theory needed to be reconsidered with regard to the nature of connotation and its role in both dimensions of sign systems. A solution to the second problem was suggested by Jakobson (section 1.d), while a solution for the first problem we may find in Peircean semiotics (section 2).

d. Semiotics according to Jakobson

Roman Jakobson (1896 – 1982) was a Russian linguist and semiotician. He followed the dyadic sign tradition thus far. Yet, in contrast to Barthes, his focus was again on linguistics, which he considered to be encompassed by semiotics.[146] His work is therefore characterized by a structural analysis of purely linguistic topics such as phonology, morphology and dialectology within a semiotic frame following a top-down approach departing from linguistics as a branch of semiotics. However, from the 1950s onwards, after he moved to New York, Jakobson began to study the semiotic theory of the American philosopher and logician Peirce.[147] He in fact became one of the first European scholars to discover the relevance of Peirce's theory as it did not focus on linguistic or other semiotic signs, but generally on 'signs being signs', and because it offered a solution to the problem of referentiality.[148] While his own theories remained within the dyadic model,[149] which he deemed the 'soundest and safest base' for semiotic research, and while he still considered linguistics the sign system *par excellence*,[150] Jakobson's interests now went well beyond language: his later work is to be placed within a large and interdisciplinary context of studies on communicative behavior involving especially cognitive science, biology, physics, logic and culture within a semiotic frame following a bottom-up approach departing from linguistics as a branch of semiotics.[151] Consequently, his theories and structuralist methodology spread and strongly influenced scholars in divergent fields, among whom

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[146] 'Semiotics, as an inquiry into the communication of all kinds of messages … encompasses linguistics'; 'whereas the subject matter of semiotics is the communication of any messages whatever, the field of linguistics is confined to the communication of verbal messages'. Jakobson, *Main Trends in the Science of Language*, 32; ibid., 'Language in Relation to Other Communication Systems' in Jakobson, *Selected Writings* II, 698; Nöth, *Handbook of Semiotics*, 75-76.

[147] *Ibid.*, 74-75; Chandler, *Semiotics*, 228. It was also by influence of the American writings of Peirce that Jakobson used the term *semiotics* instead of the French *semiology*.

[148] Jakobson, 'A Few Remarks on Peirce, Pathfinder in the Science of Language', *MLN* 92 no. 5 *Comparative Literature* (1977), 1029; Chandler, *Semiotics*, 34-35. In the following §2 we discuss Peirce and add referentiality to the sign model, which Jakobson did not yet do.

[149] *Ibid*. Jakobson did not directly incorporate a referent into his model, which remained formally dyadic, but he did promote the role of context.

[150] Jakobson, 'Language in Relation to Other Communication Systems' in Jakobson, *Selected Writings* II, 699. In this paper, Jakobson attributed the earliest dyadic model to Stoic doctrine, of which he said that it viewed the essence of signs 'in their necessarily twofold structure, namely, an indissoluble unity of an immediately perceptible *signans* and an inferable, apprehensible *signatum'*. Jakobson considered *signans* and *signatum* the only correct translations of the corresponding Greek terms and rejected De Saussure's terms *signifié* and *signifiant*, as well as their English translations *signifier* and *signified*. Ironic, however, is the fact that Stoic doctrine was in fact the predecessor of the triadic sign-model. Nöth, *Handbook of Semiotics*, 75, 90; chapter 1. For reasons of clarity, we refer to Jakobson's own statements on the insignificance of terminology to justify our choice in retaining the terms *signifier* and *signified* instead of *signans* and *signatum*. Jakobson, 'Toward a Linguistic Classification of Aphasic Impairments' in Jakobson, *Selected Writings* II, 293 ('purely conventional nomenclature is harmless as long as we are aware that it is nothing but convention').

[151] See, for instance, Jakobson's chapter 'Interdisciplinary Outlooks' in Jakobson, *Selected Writings* II, 655-722.

dominant figures such as the anthropologist Lévi-Strauss and the psychoanalyst Lacan.[152] Many of Jakobson's theories and methodological principles have proved to be key contributions to further semiotic, as well as conjoint semiotic, linguistic and cognitive research. Examples are his theory on the six social functions of language; the notion of binary oppositions; and the relation of the two fundamental operations that underlie communicative behavior (i.e. selection and combination in the paradigmatic respectively syntagmatic dimension) with the dichotomies of similarity and contiguity, and metaphor and metonymy.[153]

It is the last mentioned contribution which is most important and relevant in the current discussion. It involved a reconsideration and elaboration on Barthes' theory of denotation and connotation, which Jakobson brought into the sphere of cognitive science. By relating the processes of selection and combination with similarity and contiguity, with metaphor and metonymy, and with studies into human cognition he illustrated how different forms of connotative meaning are generated in both dimensions, and how these forms can be related to cognitive patterns for the production and interpretation of communication in the human brain.

The following pages contain some repetition of the theories and ideas already mentioned in previous sections, but this serves to explain how all theories and ideas come together; that is, how they merged into an all-encompassing structure that underlies not only linguistic and other semiotic systems, but *communicative behavior* in general.

d.1 Analysis of communicative behavior: two dimensions, two operations, two rhetoric tropes

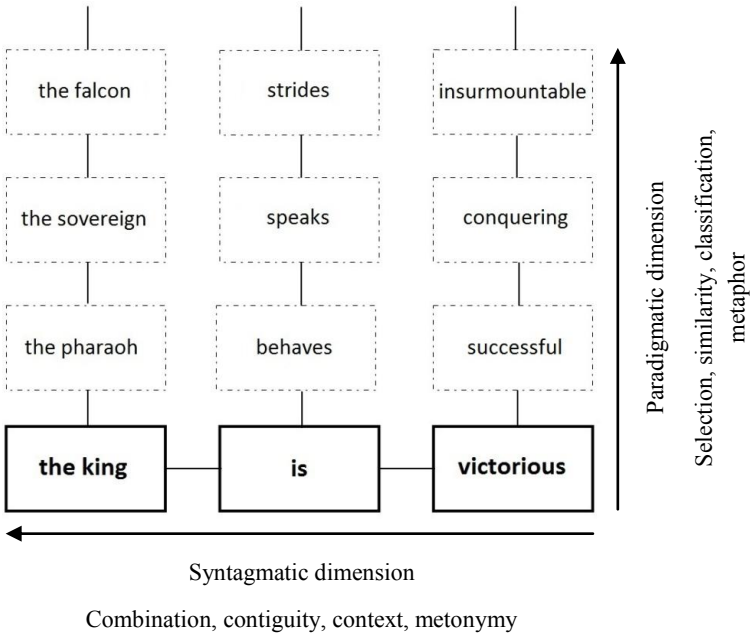


Fig. II2-30 The message 'the king is victorious' in Jakobson's refined schema of the syntagmatic and paradigmatic dimensions of language, displaying selection on the basis of similarity and combination on the basis of contiguity. Based on Chandler, *Semiotics*, 84 (fig. 3.1).

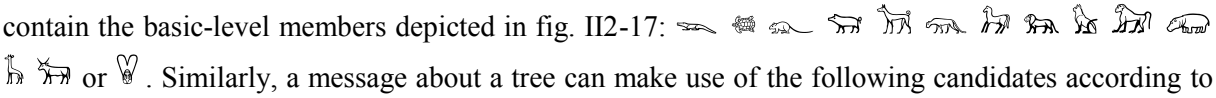
[152] E.g. Lévi-Strauss, *Structural Anthropology*; Lacan, *L'instance de la Lettre dans l'Inconscient ou la Raison depuis Freud*. Chandler, *Semiotics*, 230-231; Nöth, *Handbook of Semiotics*, 75.
[153] *Ibid*., 74-76; Chandler, *Semiotics*, 230.

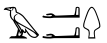
Fig. II2-30 illustrates Jakobson's refinement of the two dimensions of semiotic systems. He emphasized the operation underlying the syntagmatic dimension (i.e. combination) and the operation underlying the paradigmatic dimension (i.e. selection) as two essential operational principles and as two fundamental modes of arrangement that underlie all forms of communication as well as all human behavior in general.[154] He argued that when we express a message we constantly select and combine. For example, when we want to express ourselves about the king, we must choose between terms such as 'king', 'pharaoh', or 'sovereign'. When we want to say something about his status in a war, we choose between terms such as 'victorious', 'successful', 'conquering' or 'insurmountable'. Selection of possibilities is one aspect; the diversity of possibilities in combining units is another.[155] Selection and combination take place on both the level of the sign and the level of the sign system. Jakobson reconsidered these levels as a semantic and a feature level. On the semantic level, a sign system is broken down into its ultimate units endowed with meaning, for instance morphemes and words in linguistic communication. On the feature level, these smallest semantic units are dissolved into minimal meaningless units, which merely serve a function of differentiation, for instance phonemes in linguistic communication.[156] Selection and combination of units always lead to the generation of signs with a higher degree of complexity. Thus, the selection and combination of phonemes in the feature level lead to the generation of morphemes and words in the semantic level (cf. Fig. II2-19 in section 1.b). On the semantic level, selection and combination lead to units with ever higher degree of complexity: the generation of phrases, sentences, utterances, discourse (as in fig. II2-30).[157] Although not denoted as such by Jakobson, these two levels of analysis have become known as the principle of double articulation.[158] A communication system is articulated if it can be broken down at least into units which are themselves significant. Such a system has *first articulation*, the units of which are complete signs endowed with meaning. Traditional examples are pictograms and traffic signs. Only doubly articulated codes have second articulation as well: a further analytical level with minimal functional units. They lack meaning in that they are not signs in themselves; rather, they function to differentiate the signs of first articulation of which they are the building blocks. By means of the minimal functional units /**b**/ and /**p**/, for instance, the meaningful units /**b**in/ and /**p**in/ can be differentiated.[159] Chandler remarks that human language is the only undisputed example of a doubly articulated communication system. At least, double articulation does not seem to occur in the communication systems of other animals. Nöth remarks that, in addition to human language, many data-processing systems such as systematic codes used in libraries are doubly articulated as well. Yet, a key semiotic debate is over whether or not visual systems such as photography, painting and drawing

[154] Jakobson & Halle, *Fundamentals of Language*, 93; Jakobson, 'Linguistic Types of Aphasia' in Jakobson, *Selected Writings* II, 307-308.
[155] *Ibid*., 308.
[156] Jakobson & Halle, *Fundamentals of Language*, 14.
[157] *Ibid*., 72-74. May it be clear that the levels of articulation are not to be thought of in terms of syntactical levels. There are more syntactical levels of analysis than there are levels of articulation (e.g. the syntactical levels of the sentence, proposition, syntagm, word). Each of these syntactical levels is simply a successive combination of the basic signs, and says nothing about their articulation. See the words by Guiraud cited by Chandler: http://visual-memory.co.uk/daniel/Documents/S4B/sem08a.html.
[158] Martinet, *Eléments de linguistique générale*; Chandler, *Semiotics*, 244, 249, 261-262, 264.
[159] Chandler online: http://visual-memory.co.uk/daniel/Documents/S4B/sem08a.html. There are also signs without articulation. These signs bear no direct relation to each other, i.e. do not derive meaning in relation to signs preceding or succeeding them, and thus have no level of second articulation. Neither are they divisible into recurrent compositional element. Chandler argues that the 'language of flowers' is an example, since each type of flower is an independent sign which bears no relation to the other flower-signs. In other words, the combination of several flowers does not lead to a meaningful message.

have double articulation. The philosopher Susanne Langer argues that, while such systems have lines, colors, shapes and so forth, which are 'abstractable and combinatory' and 'are just as capable of articulation … as words', they have *no vocabulary units with independent meanings*. Thus, they have second articulation, but no *vocabulary* of first articulation. In other words, they are open systems and can create new forms at will.[160] Still, it may be convenient on a purely structural level to conceive of visual communication other than human language in terms of double articulation, at least in the case of ancient and obsolete systems, which may be considered closed in that the production of new forms has ceased. The archeologists Sauvet et al. and the archaeologist and semiotician El Hassan Ezziani have analyzed rock art in the Franco-Catabrian region respectively the Atlas mountains in terms of double articulation, which they considered the most objective approach to their material.[161]

Paradigms: selection, similarity, metaphor

Let us take a closer look at the operational principles, starting with selection. Before we express a message, for instance a word or sign of higher complexity, all possible units (representations and concepts) that a culture holds in store for the expression of messages in general are first of all classified (out of the purport, in Hjelmslevian terms). This happens according to classification principles that are culture-bound. Classification theory, which studies the classificatory principles existent in different cultures, was introduced in section 1.b for ancient Egypt. In forming a message, certain units are activated by classification and labeled as probable candidates with a high chance of being selected. For example, when we want to express something about a four-legged animal and we would follow the Egyptian principle of categorization, our remaining units to choose from would contain the basic-level members depicted in fig. II2-17:  or . Similarly, a message about a tree can make use of the following candidates according to ancient Egyptian classification principles:

 *ꜣᶜᶜ*

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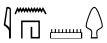 *jnhmn*

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and several other candidates that were conceptualized in the taxonomy TREE.[162] The intended sign can be selected from among these probable candidates. Taxonomical classification can then be considered as a first selection of units, of members to choose from in a *taxonomic paradigm*.[163] This selection and classification prevents that we have to search for an intended unit from among all

[160] Chandler, *Semiotics*, 6-7; Langer, *Philosophy in a New Key* (1951), 86-87. See also the communication between Chandler and Nöth as reported online on possible other double articulated systems: http://visual-memory.co.uk/daniel/Documents/S4B/sem08a.html.

[161] Sauvet, Sauvet & Wlodarczyk, 'Essai de sémiologie préhistorique' in *Bulletin de la Société préhistorique française* 74 (2) (1977), 545-558; El Hassan Ezziani, 'Une application d'un modèle sémiotique à l'art rupestre' in *Sahara* 18 (2007), 127-148.

[162] Listed in Goldwasser, *Prophets, Lovers and Giraffes*, 45-48.

[163] Cf. Fig. II2-18: taxonomic paradigms contain the probable candidates that exist in Hjelmslev's substance-strata.

possibilities; in the examples of and above including also objects, persons, or fish, and so forth. Taxonomic paradigms are therefore first selections that help communication to be effective and fast.

But they are not the only kind of paradigms we may rely on in communicative behavior. Paradigms are ad hoc classifications: they are made anew every time a new sign is to be formed.[164] Their composition may thus vary with every new sign, being adjusted to situation-specific context. That is, their members may vary precisely in order to be able to create *context-specific and multiple layers of meaning*. According to Jakobson, the main principle underlying different categorization procedures that lead to different compositions of paradigms is the binary opposition similarity – dissimilarity. He argued that the members within a paradigm are related to each other by various degrees of similarity; they are members of that same paradigm on the basis of some similarity. By logic, they are then dissimilar to a certain extent as well, which makes them substitutable alternatives. A simple example on the feature level explains this. In the words /**b**in/ and /**p**in/, the phonemes /**b**/ and /**p**/ are similar in that they are both bilabial phonemes and can both fill the initial slot of the sign to be formed. But they are dissimilar in form as well as in pronunciation: /**b**/ is voiced, and /**p**/ is voiceless. Their similarity makes them substitutes; their dissimilarity makes them alternatives. Due to this (dis)similar nature substitution has consequences for the meaning of the message to be conveyed. It is due to degrees of similarity and dissimilarity in the paradigmatic dimension that /**b**/ and /**p**/ function to differentiate the combinations /**b**in/ and /**p**in/ composed in the syntagmatic dimension.[165]

The same opposition is found between the members of paradigms on the semantic level. Jakobson exemplifies this with the phrase 'he did'. In order to produce and interpret this message, the addresser respectively addressee must know the units 'he' and 'did' as well as the relations of similarity and dissimilarity with other units. For instance, they must know that 'did' and 'does' are similar in that they are both derived from the same verb, but that their grammatical form is dissimilar and therefore meaningful in the message.[166] Another example are the units in fig. II2-30. The substitutable alternatives 'king', 'pharaoh' and 'sovereign' are similar in that they can all denote the same person. Yet, they are not identical, and it is precisely their dissimilarity that endows the final selection with meaning. The same is valid for the units 'victorious', 'successful, 'conquering' and 'insurmountable'. Whether we say 'the king is victorious' or 'the pharaoh is conquering' makes a semantic difference for the person who interprets this message in a certain situation and context, the former implying victory in general, the latter gain of territory in particular.[167]

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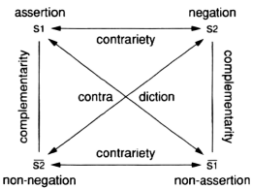
[164] The formation of taxonomic and ad hoc paradigms lies at the basis of connectionism and activation networking; theories that belong to cognitive psycholinguistics and semantic network analysis. We discuss them in more detail in chapter 3.

[165] A similar example is offered by Jakobson with the words 'pig' and 'fig' in Jakobson & Halle, *Fundamentals of Language*, 72-73.

[166] Jakobson, 'Aphasia as a Linguistic Topic' in Jakobson, *Selected Writings*, 232-234. Similarly, they must know the similarity and dissimilarity between units 'he', 'she', 'we', and so forth.

[167] The literary semiotician Greimas was inspired by Jakobson's binary opposition as principle underlying the selection of a certain unit in order to convey a specific message. He elaborated on it in his model called 'The Semiotic Square', which illustrates that selection of units in the paradigmatic dimension entails a careful consideration of the nuances of meaning of these units in relation to the message one wants to convey.



In the opposition 'black – white', for instance, 'black' can be the assertion, 'white' the negation, 'non-black' the non-assertion, and 'non-white' the non-negation. Something that is 'non-black' is not per definition 'white',

A semantic difference becomes even more prominent in the selection of a fourth unit which we allocated to the paradigm from which we selected 'king': 'falcon'. This is a unit from a different taxonomic paradigm, namely BIRDS.[168] How does it end up in the paradigm for 'king', and why are other birds not included (e.g. 'duck' or 'goose'), or even units from other taxonomic paradigms (e.g. 'fish')? How is it possible that this specific member from the taxonomic paradigm BIRDS can become a member in an ad hoc paradigm for 'king'? How is it possible that this goes, but not anything goes?

It is due to the existence of cognitive patterns that differ from culture to culture, are rooted in experience, beliefs and traditions, and that influence the composition of an ad hoc paradigm so that a situation-specific message can be expressed.[169] In ancient Egypt, the king could be conceptualized as a falcon, but he was not conceptualized as a duck or a fish. Certain qualities or aspects of the falcon were extracted and projected onto him: for instance its sharp eyesight or swift attack, or its religious manifestation as Horus, son of Osiris.[170] This projection is a form of rhetoric, namely metaphor, and in particular animalistic metaphor. The essence of metaphor is understanding and experiencing one kind of thing in terms of another to which it is culturally considered similar.[171] In semiotic terms it involves one signified acting as a signifier signifying a different signified (fig. II2-31). Thus, qualities or aspects of the concept to which the expression 'falcon' refers are projected onto a different concept, the original expression of which is 'king'. As a new expression it now signifies a new concept *falcon-king* in which the old concepts *falcon* and *king* are merged. The king has gained qualities and aspects of a falcon. A message such as 'the falcon is victorious' does not only inform that the king has won, but also that he won either by sharp sight, by swift attack, or as divine ruler on earth, Horus, son of Osiris.

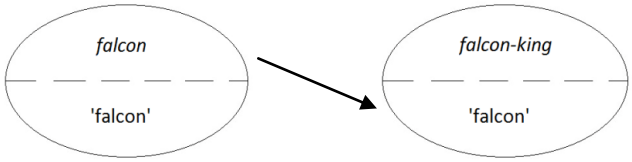


Fig. II2-31 The generation of metaphor as a semiotic process: projection of qualities of one signified onto the signified of another sign, and using the former as expression for the new, merged signified.

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and something that is 'non-white' is not per definition 'black'. The four terms are all related to the initial opposition 'black-white' in different degrees of similarity and dissimilarity. As regards fig. II2-30 we can put all units of the paradigm from which we selected 'victorious' in such a square, which enriches paradigms with further terms from which we can select. For instance, in an opposition 'victorious – defeated' the degrees of similarity and dissimilarity are 'non-victorious' and 'non-defeated', with which we can express that the king neither won nor lost. The same can be done with the oppositions 'successful – unsuccessful' ('non- successful' and 'non-unsuccessful'), 'conquering – conquered' ('non-conquering' and 'non-conquered'), and 'insurmountable – surmountable' ('non-insurmountable' and 'non-surmountable'). Herewith, Greimas in fact created sub-paradigms, enriching the ad hoc paradigms created for the formation of a specific sign with more nuances to select from. Although Greimas' contribution is important in linguistic semantics, its consideration in the context of the marking system has thus far not led to interesting results. Chandler, *Semiotics*, 107 (fig. 3.4).

[168] Goldwasser, *Prophets, Lovers and Giraffes*, 19 (with footnote 54): in four instances, the writing of the word 'falcon' is classified with 𓅃, the duck, in extension the superordinate classifier for BIRD.

[169] See also Goldwasser, *From Icon to Metaphor*, 83, where the same idea is mentioned, i.e. cognitive patterns that consist of concepts which belong to different common taxonomic categories.

[170] *Ibid*., 12-13, 62.

[171] Lakoff & Johnson, *Metaphors We Live By*, 5.

This projection of one concept onto another and the formation of a new sign with a merged concept is only temporary, relating to a particular situation and a specific context. Thus, on the basis of the Egyptian conceptual metaphor 'the king is a falcon', the units 'king' and 'falcon' can temporarily be considered interchangeable alternatives in the formation of a context-specific message. An explicit example is found in the Poetical Stela of Thutmosis III (CGC 34010), eighth stanza line 20: *dj=j mɜ=sn ḥm=k m nb dmɜ.t Ḥr jtj m dgg.t=f r mrr=f*, 'I cause them to see thy majesty as 'Lord of Horus' Wing', taking possession of what he sees as he wishes'.[172] In other stanzas similar animalistic metaphors are created with a bull, a crocodile, a lion and a jackal. Another example from the Egyptian conceptual system is the ad hoc paradigm in which 'enemy' and 'locust' can become interchangeable alternatives. In the 5th dynasty tomb of the nobleman Wernu, the tomb owner is called 'the one who captures the locust'.[173] The locust is a metaphor for 'the enemy': the unit 'enemy' is transferred from its taxonomical paradigm of human beings, and the unit 'locust' is transferred from its taxonomy of dangerous insects. Both are part of an ad hoc paradigm based on the conceptual metaphor 'the enemy is a locust'.[174] Metaphors in our own languages and cultures are not always recognized as they are part of our daily conceptual system, but a well-known animalistic metaphor is, for instance, 'you're a pig!'. Well-known non-animalistic metaphors are 'the world's a stage',[175] where 'world' and 'stage' are temporarily compared in qualities and aspects; or 'my job is a prison', where qualities and aspects of life in prison are compared to one's working places; and finally 'metaphor is an umbrella term',[176] where the comparison of 'metaphor' with 'umbrella' suggests that the former is used as a cover term that incorporates processes of other rhetoric nature as well.

In sum, the operational principle of similarity underlies the grouping of units into taxonomic and ad hoc paradigms according to classification principles and culture-bound conceptual patterns, and the selection of units from them in order to form messages. These messages may gain metaphorical layers of meaning when they are built on degrees of similarity between units that belong to different taxonomic paradigms, which are temporarily made members of the same ad hoc paradigm. The paradigmatic dimension thus generates metaphor.

Syntagms: combination, contiguity, metonymy

Let us now turn to the operation of combination, for it is not merely the composition of paradigms and the selection of units that contribute to the generation of meaning. Meaning is also derived from the context external to the units themselves. Context is created by combining units in the syntagmatic dimension. In the words of Lakoff 'every word is defined relative to frames'; we think and we understand in frames,[177] which in structural linguistic semiotics are syntagmas, or syntagms. Thus, it is not only the similarity and dissimilarity internal to the units 'king', 'pharaoh', 'sovereign' or 'falcon' which are meaningful in the message 'the king is victorious'; neither is it merely the selection of the units 'the king', 'is' and 'victorious' that conveys the message. Meaning is derived precisely from the

[172] This is in fact simile, here considered a form of metaphor in which the figurative status of the comparison is made explicit through the use of the word 'as' or 'like', here *m*.
[173] Goldwasser, *From Icon to Metaphor*, 22.
[174] *Ibid*., 22-23.
[175] Shakespeare, *As you like it*, Act II Scene VII.
[176] Chandler, *Semiotics*, 126.
[177] Lakoff, Lecture "Why Linguists Are Needed: The Severe Limitations of Big Data Analysis of Linguistic Corpora", March 13, 2015 at Vrije Universiteit Amsterdam.

combination of these units in this exact order. Syntagms are the contexts for their individual units.[178] The underlying organizational principle in syntagms is *contiguity* between the units, as opposed to similarity between units in paradigms. In the combination of signs in the semantic level of the sign system, this contiguity can be sequential or spatial.[179]

In sequential syntagms the relations between units are essentially about 'right' and 'left', or 'before' and 'after'. Such relations we find particularly in linguistic signs and sign systems, in which units are 'presented one after another' in space and time, as in a chain (i.e. temporal sequential relations in auditory sign systems and linear sequential relations in visual sign systems).[180] In spatial syntagms the relations between units include 'above' and 'below'; 'in front' and 'behind'; 'close' and 'distant'; 'interior' and 'exterior'; or 'center' and 'periphery'.[181] Jakobson argued that these relations are found particularly in signs and sign systems other than linguistic communication such as painting.[182] However, it should be mentioned that, although sequential relations tend to be dominant in linguistic systems and spatial relations in other systems, most semiotic systems rely heavily on both kinds of contiguous relations.[183] This is certainly the case with audio-visual media such as television and cinema, which make use of sequential linguistic messages, and of more spatial distribution of signs; but one can think of simpler examples as well, such as the use of a Capital letter in a word: in the word 'Capital' we have not only a sequential relation between the units C-a-p-i-t-a-l which is significant in modern English language, but also a spatial relation between the first and the last six units of this word, which in this same language contributes to meaning by indicating the beginning of a sentence or proper name.

Contiguous relations are not semantically neutral. The cognitive semanticists Lakoff and Johnson have shown how contiguous relations are linked to key concepts in a culture and thus contribute to culture-specific meaning.[184] For instance, 'left' and 'below' are usually associated with the past, closure, something foregone, or dark and negative; and 'right' and 'above' are usually associated with the future, something new, open and unknown, but full of possibilities.[185] Let us take two sign systems as examples. The first is photography (fig. II2-32). Because of the fact that reading and writing in modern Western linguistic systems proceed along a sequential syntagmatic axis from left to right, the interpretation of the meaning of photographs may likely follow the same direction.[186] There is, then, potential sequential significance in the left-hand and right-hand elements of photographs, of which students at the Academy of Photography in the Netherlands are taught the

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[178] This relates to both the feature and semantic levels as explained above on p. 155: a unit finds its context in more complex units of a higher degree of complexity, but at the same time serves itself as a context for units from a lower level. Jakobson, 'Aphasia as a Linguistic Topic' in Jakobson, *Selected Writings* II.

[179] Jakobson, 'On the Relation between Visual and Auditory Signs' in Jakobson, *Selected Writings*, 340-344; Chandler, *Semiotics*, 110-115.

[180] De Saussure, *Course in General Linguistics*, 69-70; Chandler, *Semiotics*, 110.

[181] *Ibid*., 110-111; Lakoff & Johnson, *Metaphors We Live By*, 14.

[182] Jakobson, 'Visual and Auditory signs' in Jakobson, *Selected Writings*, 336.

[183] Chandler, *Semiotics*, 110-111.

[184] Lakoff & Johnson, *Metaphors We Live By*, chapters 4-8; Chandler, *Semiotics*, 111.

[185] *Ibid*., 112; Kress & Van Leeuwen, *Reading Images*, 186-188.

[186] That is, we do not per definition *read* the signs of a picture or photograph from left to right. Our eyes approach a picture or photograph, focusing first of all on the central or main subject, which may be positioned anywhere and may be highlighted by the artist or photographer through size or eye-catching colors. But when the eyes have collected the signs of which the picture or photograph is composed, the brain starts to puzzle to make a message out of it. And this message may likely be interpreted along the same line as linguistic messages. Jakobson argued that some people might not appreciate abstract art precisely because the brain cannot figure out the puzzle when the message does not proceed along familiar lines. We might get frustrated and conclude that it 'is just a mess'. Jakobson, 'On the Relation between Visual and Auditory Signs' in Jakobson, *Selected Writings* II, 341.

importance.[187] Fig. II2-32 presents two examples in which right and left are meaningful in the contiguous sequence of signs.

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a.

b.

Fig. II2-32a. Photograph evoking the idea of a new start; **b** Photograph evoking the idea of nostalgia. Photographs from Sieveking, Reader 'Basisopleiding' of the Academy of Photography Rotterdam, 51.

Photograph 'a' is liable to an interpretation of a new start in a new house coming from a darker past looking toward a brighter future. This interpretation is generated by a syntagm of light: darkness and shadow on the left in contrast to light on the right. The darkness and shadow on the left intensify the connotation of 'left', while the brightness on the right does the same for 'right'. The flower casts a long shadow to the left and itself leans to the right; it is another sequential signifier that strengthens the interpretation. A significant spatial syntagm is similar to the sequential syntagm of light, and also strengthens the interpretation: darkness below, and light in the upper part of the photograph. Photograph 'b' may evoke the idea of nostalgia. The woman is positioned in the left half of the photograph and is faced toward the left, interpreted as the past. However, she leans slightly backwards, and also her hair and shawl show that the wind gently pulls her away from the past, toward the right. The idea of nostalgia is furthermore evoked by the violin she plays, an instrument which is often associated with nostalgia and melancholy.

The relation between the signs in the syntagmatic dimension (their combination in contiguous sequence) is not only a sequential one here; it is also an evaluative one with regard to the signifieds for which they stand. Evaluative syntagmatic relations cooperate with paradigmatic selections and cultural values associated to the selected units: the flower (life) in photograph 'a' and the violin (nostalgia, melancholy) in photograph 'b'. Imagine that instead of the flower a suitcase was selected in photograph 'a': it would change the interpretation to departure. Thus, composition can generate meaning because it is connoted with cultural associations that are linked to sequential and spatial relations.

The second example are the marks ostraca from Deir el-Medina. In Part I we discerned a development in the organization of marks on the ostraca between dynasties 18 and 20. In dynasty 18 several ostraca display an apparently unorganized accumulation of marks; that is, we do not recognize an ordering or sequence in the marks. In contrast, in dynasty 19 and certainly in dynasty 20 the marks are generally well organized in horizontal rows or vertical columns. The lines can be read from left to right (sometimes from right to left), and the columns from top to bottom; that is, *the marks are read in the*

[187] Sieveking, Reader 'Basisopleiding' of the Academy of Photography Rotterdam, 48-51.

same order as hieroglyphic and hieratic script can be read. Is this development related to the absence of written material in dynasty 18 and a presence and growing influence of writing in dynasties 19 and 20? If so, we can argue that sequential thinking and reading which is implied in hieroglyphic and hieratic script influenced the marking system and was adopted by it under its growing influence. At least, increase of sequential thinking is one of the causes for the shift of the marking system discerned in the Venn-diagram toward the domain of Writing, depicted in fig. I1-8. We may furthermore argue that the increase of sequential thinking was not merely a formal change in format, but a meaningful one as well: in the later ostraca we can read from the sequences of marks the organization of the workmen in teams and their relative hierarchical positions. There is meaning in the spatial organization of the marks on the 20th dynasty ostraca, where the top positions were allocated to the foreman, scribe and deputy of the right- and left-side crews. This is the case on ostracon BM EA 50716 (fig. II2-33). It can be dated to the first years of Ramesses V on the basis of its marks. The first mark, , was used by the foreman, who in this period was *Nḫ.w-m-Mw.t* (vi). The second mark, , was used by the *sš n pɜ ḫr*, who in this period was *Jmn-nḫt* (v). The third mark, , belongs to *Ḥr-šrj* (i), who in this period was assistant scribe to his father *Jmn-nḫt* (v).[188] The fourth mark, , belongs to *ɜny-nḫt* (i), who was a deputy. By taking the four top positions, foreman, scribes and deputy are signified as being more prominent.

Fig. II2-33 Ostracon BM EA 50716, with foreman *Nḫ.w-m-mw.t* (vi), *sš n pɜ ḫr Jmn-nḫt* (v), assistent scribe *Ḥr-šrj* (i), and the deputy *ɜny-nḫt* (i) in the top right.

The examples in figs. II2-32 and 33 both display contiguous relations in the combination of signs in the semantic level of the *sign system*. But contiguous relations are also found in the feature of the level of the *sign*, in the combination of signifier with signified. Whereas in a metaphoric sign a signifier refers to its signified on the basis of a relation of similarity in qualities or characteristics, a signifier can also refer to its signified on the basis of a relation of contiguity. The sign is then metonymic. Metonymy is a form of rhetoric trope, the essence of which is to refer to something in terms of

[188] Davies, *Who's Who at Deir el-Medina*, 114-115.

something else to which it has a relation of contiguity; that it, it is directly related or closely associated with it, and evokes meaning by connection.[189] There are various sorts of contiguity relations. For instance, the signifier can refer to the signified as institute for person. Thus, when in ancient Egyptian script the expression *pr-ꜥ3*[190] is not used to signify *palace*, or *great house*, but rather the concept *king*, this combination between signifier and signified has nothing to do with a similarity of some sort between the king and the palace; yet, it has all to do with a direct relation between the king and the institute or estate from where he rules. Other examples of contiguity relations are:[191]

- effect for cause — e.g. the signifier 'red' to signify a sunburn;
- institute for person — e.g. the signifier 'The Times' in '*The Times* has not yet arrived at the press conference', signifying that *the reporter* of The Times has not yet arrived;
- place for person — e.g. the signifier 'Washington' in 'We have *Washington* on the line', signifying that there is a *reporter* or *politician* from Washington on the line; or the Egyptian signifier in *sḫ.tj*, signifying the 'peasant', who lives in the fields;
- place for event — e.g. the signifier 'Chernobyl' in '*Chernobyl* changed the attitudes to nuclear power', signifying that *the events* at Chernobyl in 1986 changed attitudes;
- material for object/ being — e.g. the Egyptian hieroglyph signifying animals which are 'made of' hide and tail, e.g. *bꜣ*, 'leopard';
- object/ tool for user(s) — e.g. the Egyptian signifier in *sš*, signifying the one who uses these tools to write with, that is the 'scribe';
- producer for product — e.g. the expression 'She owns a *Picasso'* signifying that she owns a *painting* made by Picasso;
- container for content — e.g. the signifier 'the milk' in 'Can you hand me *the milk*?', signifying the container the milk is in;
- organ for activity — e.g. the Egyptian signifier *mꜣꜣ* to signify the activity *to see*, which is what is done with the eye.

The rhetoric trope of metonymy comprises synecdoche, which involves a variety of *pars pro toto* relations. For instance, in the English expression 'Get your butt over here', the speaker surely means the addressed in his or her entirety instead of merely the designated body part. Saying area for location is also a synecdoche, for instance saying 'I'm going to the States' when technically it is only possible to go to a specific locality within the States.

Many more metonymic relations are possible. However, the above will suffice to illustrate Jakobson's argument, which can be summarized as follows.

[189] Chandler, *Semiotics*, 129-130.
[190] WB I, 516.1, 6-8.
[191] Chandler, *Semiotics*, 130; Lakoff & Johnson, *Metaphors We Live By*, 35-39; Goldwasser, *Prophets, Lovers and Giraffes*, 34-35.

Table II2-1 The generation of meaning in sign systems

Dimension	Operation	Organizational principle	Meaning
Paradigmatic	Selection	Similarity-dissimilarity	Layers of metaphoric meaning
Syntagmatic	Combination	Contiguity	Layers of metonymic meaning

In the paradigmatic dimension meaning is generated by selection of units from paradigmatic sets. These sets contain units which are similar in that they can structurally replace one another in the formation of a sign, but are dissimilar in that they offer alternatives and can change the meaning of a message. The members that belong to a paradigm are members of the same taxonomic class or are grouped together on the basis of a degree of similarity which the units share as members of a culture-bound conceptual metaphoric pattern. When a signifier is selected to refer to a different signified with which it shares qualities or characteristics, the sign as a whole gains layers of meaning which are metaphoric in nature. In the syntagmatic dimension meaning is generated by combination of units in syntagmatic sets. The syntagms contain units which are connected to each other in a context created by relations of contiguity. On the semantic level of the sign system these are sequential and spatial relations between signs which add multiple layers of meaning to the overall message when linked to cultural associations. On the feature level of the sign these are various relations that link the signifier to a signified with which it is contiguous, creating layers of meaning in connecting both within a conceptual contiguous context. The layers of meaning created as such are metonymic in nature.

d.2 Metaphor and metonymy as cognitive patterns in the human brain

De Saussure had already proposed that syntagms and paradigms (his syntagmas and associative groups) corresponded to two forms of mental activity.[192] However, in a time when semiology and linguistics were both still far apart from psychological studies, he did not elaborate on the idea. In the second half of the 20th century Jakobson, who actively promoted the cooperation between linguistics, psychologists and neurologists, argued to have found support for the generation of metaphor and metonymy in psycholinguistic studies. He suggested that the operations of selection and combination and their correlated rhetoric layers of meaning corresponded to two cognitive patterns in the brain, two processes of thought and conceptualization.[193] He especially focused on aphasia, the medical term for various forms of language disorders which become apparent in speech, writing (agraphia) or in reading (alexia).[194] Analysis of patients with aphasia, so he claimed, would provide insight into the sorts of messages and meanings produced in the syntagmatic and paradigmatic dimensions.[195] Nowadays, roughly four forms of aphasia are distinguished:[196]

1. A patient with Broca's aphasia has difficulty in combining words into larger contexts. He or she speaks in agrammatic, telegraphic style;

[192] De Saussure, *Course in General Linguistics*, 121. See also Barthes, *Elements of Semiology*, 58.
[193] Among others Jakobson & Halle, *Fundamentals of Language*, 67-96; and various papers by Jakobson in *Selected Writings* II, such as 'Aphasia as a Linguistic Topic' (pp. 229-238), 'Toward a Linguistic Classification of Aphasic Impairments' (pp. 289-306) and 'Linguistic Types of Aphasia' (pp. 307-333).
[194] Kolb & Whishaw, *Fundamentals of Human Neuropsychology*, 518.
[195] That is, we learn more about the structure and workings of the norm by studying the deviations.
[196] Wolters & Groenewegen, *Neurologie*, 454-455; Jakobson, 'Aphasia as a Linguistic Topic' in Jakobson, *Selected Writings* II, 234-238. I do not follow Jakobson in 'Toward a Linguistic Classification of Aphasic Impairments' (*Selected Writings* II, 289-306) where he presents 6 types of aphasia, and instead follow more recent medical studies.

2. In Wernicke's aphasia the patient can follow, carry on and complete a context, but has difficulty in finding words. He or she has fluent, but empty speech;
3. A patient with global aphasia displays difficulty with context as well as with word finding and is not able to produce coherent verbal behavior or to understand auditory or visual communication;
4. Amnesic aphasia resembles Wernicke's aphasia, but the symptoms are much lighter. The patient has intact speech and no difficulty with comprehension. Yet, he or she has difficulty finding words and attempts to compensate this through elaborate, little substantive descriptions.

Jakobson recognized in these four forms two underlying disorders: a contiguity or encoding disorder, in which the operation of combining and coding units into context is impaired (i.e. Broca's and global aphasia), and a similarity or decoding disorder, in which the operation of selecting alternative units on the basis of a recognition of degrees of similarity is impaired (i.e. Wernicke's, global and amnesic aphasia).[197] After having examined aphasic patients himself, Jakobson came to the following conclusions:[198]

- Patients with a contiguity disorder have lost the ability to organize simple units into more complex units on the basis of syntactical rules. They have difficulties with phoneme clusters, and the highest unit preserved in their speech is the word; the creation of sentences and longer messages is deficient. Word order is chaotic and there is no grammatical coordination (agrammatism).[199] The patients have less problems finding and selecting the intended words, however. Thus, while contexture disintegrates, the selective operation continues to work. The patients' communication consists of selecting and substituting synonyms and antonyms, that is of units that share a degree of similarity and dissimilarity. When asked to describe an object, they may express what the object is like (simile) or what it resembles in certain aspects. They can transfer aspects and qualities of the object onto another object, the expression of which they use to describe the first. Jakobson provides the examples of patients who described a microscope as a spy-glass, or a gaslight as fire.[200] A patient diagnosed with Broca's aphasia used the words 'cookies' and 'candy' as alternative substitutes.[201] The communicative behavior of these patients is therewith mainly metaphoric, metonymy being 'alien' to the contiguity disorder.[202]
- Patients with a similarity disorder, in contrast, are able to carry on a conversation, but have difficulty in starting one because they can produce and understand communication only in context. They have difficulty with word selection and with substituting one unit for another on the basis of

[197] E.g. Jakobson, 'Linguistic Types of Aphasia' in Jakobson, *Selected Writings* II, 309; Jakobson & Halle, *Fundamentals of Language*, 77-84 (similarity disorder) and 85-89 (contiguity disorder). Jakobson's terms 'encoding' and 'decoding' in fact substitute the traditional neuropsychological terms 'motor' and 'sensory' aphasia. Jakobson argued that 'encoding' and 'decoding' better explained the nature of the aphasic disorders as impairments of the language structure: 'Toward a Linguistic Classification of Aphasic Impairments' in Jakobson, *Selected Writings* II, 292-297.
[198] Here given in brief and simplified form, but see e.g. Jakobson & Halle, *Fundamentals of Language* for a more detailed account of Jakobson's findings.
[199] Jakobson, 'Toward a Linguistic Classification of Aphasic Impairments' in Jakobson, *Selected Writings* II, 294.
[200] Jakobson & Halle, *Fundamentals of Language*, 86.
[201] Obler & Gerlow, *Language and the Brain*, 41, a clear case of loss of context.
[202] Jakobson, 'Toward a Linguistic Classification of Aphasic Impairments' in Jakobson, *Selected Writings* II, 296-297.

aspects of resemblance or contrast. Pin-pointing an object through furnishing synonyms or antonyms is troublesome. Rather, they take refuge to context.[203] When asked to describe an object, they concentrate on building a context, giving a description of the object that is in contiguous relation to it. Thus, a patient of the neuropsychiatrist Goldstein was not able to name a knife unless in context of use or surrounding; he alternately called it a 'pencil-sharpener', 'apple-parer', 'bread-knife', 'knife-and-fork'. Another patient responded to the assignment to name a pencil with the words 'to write'.[204] A patient of the neurologist Head who was asked to name the color black was not able to respond with the word 'black' and instead answered 'what you do for the dead, dead'.[205] The answers of these patients are in metonymic relation to the objects they were asked to describe. Their communicative behavior is mainly metonymic, metaphor being 'alien to the similarity disorder'.[206]

d.3 Discussion

Thus, Jakobson argued that the communicative behavior of patients with a language disorder indicates the existence of two cognitive patterns that are characterized by either one of two fundamental tropes: metaphor or metonymy. With this theory he provided a more nuanced version of Barthes' theory of denotation and connotation. Instead of a sharp distinction between denotation as an objective meaning and connotation as a second meaning of higher order, there were now simply multiple layers of meaning that could be generated in the syntagmatic dimension as metonymic in nature and in the paradigmatic dimension as metaphoric in nature. This is not to say that we do not make use of a difference in literal and rhetoric meaning in our communication, for in fact we do, but it does make one realize that a first meaning is not literal per se and is oftentimes rhetoric from the start. Lakoff and Johnson argue that rhetoric tropes such as metaphor and metonymy are an integral part of our conceptual system. They are not only 'a device of the poetic imagination and the rhetorical flourish'; they are not 'poetic' or 'fanciful'. Rather, they are pervasive in everyday life and thought; it is our ordinary way of thought and expression.[207] This means that the two tropes as patterns and processes inherent in the human brain are not only present in linguistic communication; they must be present in all forms of communication that are produced and interpreted by the human brain. Metaphor and metonymy must therefore be present in semiotic systems of other nature as well.[208]

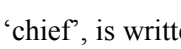
That a first layer of meaning cannot always be considered denotative, objective and literal can be shown with an example from ancient Egyptian hieroglyphic script. We have seen the metaphorical pattern 'the king is a falcon'. In Barthesian terms, when the king is signified as 'falcon', this is meaning on the connotative level. When not referring to the king the expression 'falcon' signifying simply the concept *falcon* is meaning on the denotative level. Hieroglyphic signs, in what Barthes

[203] Jakobson, 'Aphasia as a Linguistic Topic' in Jakobson, *Selected Writings* II, 235; Jakobson & Halle, *Fundamentals of Language*, 78.
[204] *Ibid*., 80.
[205] *Ibid*., 79-84.
[206] Jakobson, 'Toward a Linguistic Classification of Aphasic Impairments' in Jakobson, *Selected Writings* II, 296.
[207] Lakoff & Johnson, *Metaphors We Live By*, 3-6; Lakoff, Lecture "Why Linguists Are Needed: The Severe Limitations of Big Data Analysis of Linguistic Corpora", March 13, 2015 at Vrije Universiteit Amsterdam. Lakoff & Johnson provide the metaphor ARGUMENT IS WAR as an example. We talk about arguments in terms of war in statements such as 'Your clams are *indefensible*'; 'He *attacked* every weak point in my argument'; and 'I've never *won* an argument with him'. Our conventional ways of talking about arguments presuppose this metaphor we are hardly ever conscious of. 'The metaphor is not merely in the words we use – it is in our very concept of argument' (p. 5).
[208] In the next chapter we discuss whether Jakobson's theory can in fact be supported by cognitive and neurological studies of the human brain. Here, we first continue with a discussion of its implication for the marks from Deir el-Medina.

would call the denotative level, are icons with an initial status of 'representatives of the object' or being. This initial status is the most immediately visual level of hieroglyphic reading and produces a primary meaning, culturally considered the most straightforward meaning, which was probably comprehensible even to the uninitiated. Goldwasser argues that this primary meaning was the result of an early process of sign formation in which 'mental images' were fixed as signifieds to hieroglyphic signifiers at the time of script invention.[209] However, the hieroglyph was nailed as a signifier not simply to the signified *falcon*, but to what was in ancient Egyptian culture its most straightforward, direct signified, that is the *Horus falcon (ḥr)*. This initial meaning is already culturally and religiously connoted with metaphoric meaning: a merging of the qualities and characteristics of both the god Horus and the bird falcon. Only in a second layer of metaphoric meaning does the Horus falcon merge with the king. Thus, instead of succeeding layers of denotation and connotation we find multiple layers of meaning that are metaphoric, or metonymic, in nature to greater or lesser extent.

While this aspect of Jakobson's theory was appreciated in the analysis of signs and meaning, the idea that meaning was so clearly separable into a metaphoric product of the paradigmatic dimension and a metonymic product of the syntagmatic dimension was criticized.[210] Metaphorical and metonymical processes are not clearly separable. Although in aphasia, as abnormal communicative behavior, emphasis appears to lie on one functional dimension, in normal communicative behavior the situation is much more complex. Clearly, communication in its various aspects and forms deals with both dimensions. Jakobson knew this,[211] but what several scholars thought of as understated in his theory was the fact that metaphorical and metonymical processes mix and cooperate in the creation and generation of meaning. They contribute simultaneously and interactively to meaning. Only complementary do they produce and convey the full meaning and value of signs and messages. An example of the intimate relation between metaphor and metonymy are the sequential and spatial contiguity relations mentioned above. When in a painting or a photograph there is a meaningful relation between signs below and signs above, these signs are interpreted in a contiguous spatial relation where 'above' and 'below' are key concepts. But it is precisely the connection of these key concepts to associations and values that exist within a culture that makes the contiguous relations metaphoric: 'above' is usually associated with something light, positive, or with control and status, while 'below' is often associated with something dark, negative, or with being controlled and low status. Qualities and aspects of something light, dark, and so forth are projected onto the concepts 'above' and 'below'. Thus, we speak in metaphor when we say 'I am feeling *down/up* today', 'I have control *over* you', or 'he is *under* your control'. Lakoff and Johnson call this *orientational metaphor*.[212] They also exist in the ancient Egyptian conceptual system: *ḥry*, 'who is *upon*', that

[209] Goldwasser, *From Icon to Metaphor*, 1, 20, 33, 56. She notes that iconic reading is not the same as picture reading, since the script system aimed at the representation of linguistic items and with chaining a written signifier with a signified that exists as linguistic concept.
[210] Culler, *The pursuit of signs*, 192-193.
[211] Jakobson, 'Aphasia as a Linguistic Topic' in Jakobson, *Selected Writings* II, 232.
[212] Lakoff & Johnson, *Metaphors We Live By*, 14-19. Their association of 'happy' with 'up' and 'sad' with 'down' is based on the embodiment of emotion. The metaphors appear in our conceptual system based on the characteristic that our body goes up when we are happy, seen specifically in the corners of the mouth when we smile, while we *drop* our head and shoulders when we are feeling down. Expressions such as '*jump* for joy' and '*drop* our head' are expressions in our communicative behavior of *everyday life* based on conceptual metaphoric patterns linked to the embodiment of emotions. Lakoff, Lecture "Why Linguists Are Needed: The Severe Limitations of Big Data Analysis of Linguistic Corpora", March 13, 2015 at Vrije Universiteit Amsterdam.

is 'chief', is written with the sign representing the sky above, and  *ḥry-ʿ* literally expresses 'to be *under* someone's arm' as a word for 'substitute' or 'assistant'. The same connection of spatial relations to these associations and values we have seen in the positioning of foreman, scribes and deputy in top positions related to control or status in the marks ostraca: the spatial contiguity between the marks is metaphoric for the status ascribed to the mark-bearers.

The problem that metaphorical and metonymical processes cannot be clearly separated is in fact a more fundamental one. Oftentimes, metaphor is generated by metonymy.[213] Several scholars therefore speak of metaphoric and metonymic processes, but only of metaphor as fundamental rhetoric trope. Among them is Goldwasser. In her application of the dyadic model to the hieroglyphic sign she explains how metonymic processes support metaphor. Paradigms are, in her terms, not only organized according to taxonomic and metaphoric principles, but also according to 'schematic', that is, contiguity relations.[214] The choice for a specific paradigm-member is therewith influenced by metaphorical as well as metonymical principles. Consider figs. II2-34a and b, an elaboration of the schema introduced in section 1.a.5:

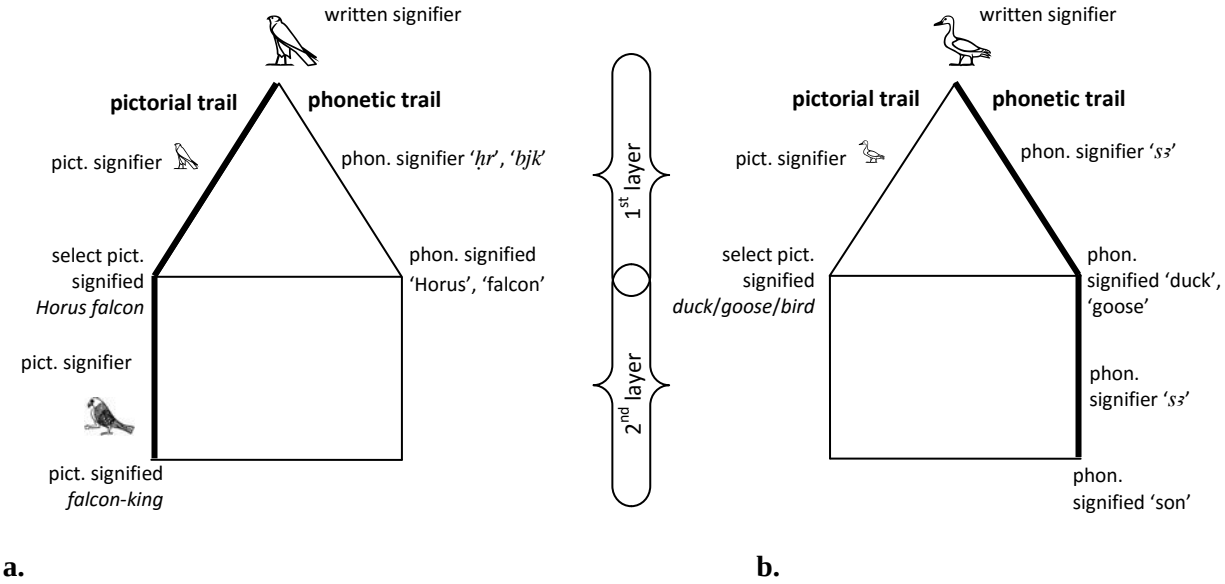


Fig. II2-34a-b Multiple layers of metaphor and metonymy in hieroglyphic signs, resulting in **a.** pictorial metaphor; and **b.** phonetic metaphor. N.B. The model as such is not taken from Goldwasser; the present author is responsible for the elaboration.

The first layers of meaning of both signs are clear by now. In the case of the concept *Horus falcon* is signified in the pictorial trail, while the phonetic signifieds 'Horus' and 'falcon' are signified by the phonetic signifiers '*ḥr*' and '*bjk*' in the phonetic trail. In the case of the concept *'duck'*, *'goose'* or '*bird'* is signified in the pictorial trail, while the phonetic signified 'duck' or 'goose' is signified in the phonetic trail. But both signs can convey a second layer of meaning, which in the case of can be called pictorial metaphor, and in the case of phonetic metaphor. In schema 'a' we may find in the

[213] Culler, *The pursuit of signs*, 193.
[214] Goldwasser, *Prophets, Lovers and Giraffes*, 15-16.

pictorial trail the depiction , a falcon with human arm as seen on the Narmer palette.[215] Based on the metaphoric pattern 'the king is a falcon' it represents a fusion of semantic aspects of with those of a human being. As a newly formed signifier in the pictorial trail, it has as its signified no longer merely the *Horus falcon*, but also a *human*, the king from the metaphor. Pictorial metaphor thus comprises the transposition of aspects of one signifier onto another signifier, the new pictorially metaphoric signifier signifying a new signified that has qualities and characteristics of both original signifieds.[216] In the second case, schema 'b', the phonetic signifier of may become detached from its original signified, and may be transferred onto a new signified on the basis of a similarity in sound pattern. Thus, '*sꜣ*' 'duck' or 'goose' and '*sꜣ*' 'son' share similar sound patterns. The sound pattern *sꜣ* in the sign *sꜣ*, 'duck' or 'goose' may in a second level of meaning become detached from its original pictorial and phonetic signifieds *duck*/'duck' or *goose*/'goose', and be transferred onto the new phonetic signified 'son'. In this case of phonetic metaphor, and in contrast to pictorial metaphor, the signifier remains the same, but refers to a new signified while its original signified is discarded.[217]

Both processes are called metaphoric as they behave conform the Greek compound *meta* 'over' and *pher ein* 'to carry': aspects of one object, whether semantic or phonetic, are carried over or transferred onto another object.[218] But precisely because *specific* qualities and characteristics are *selected* to be carried over, the graphic and phonetic metaphoric signs are metonymic as well.[219] In schema 'a', contains the selected semantic aspect of the human arm, which stands in metonymic relation of synecdoche (*pars pro toto*) to the signified of human being or king. In schema 'b', a metonymical process takes place when the phonetic pattern is extracted and as part of the original sign refers to a new signified. Metonymical processes thus support metaphor.

Other examples of pictorial metaphor are the signs and : both are made up of parts of a human being and parts of a bird, the first referring to the Egyptian notion of the *subject rḫy.t-people*, the second to the notion of the *human soul*.[220] Other examples of phonetic metaphor are, among many others, the application of the sound pattern of the sign '*pr*', 'house' onto the phonetic signified 'surplus' discarding the signified 'house'; or '*ḥr*', 'face' applied onto the phonetic signified 'upon', disregarding the original signified 'face'.[221]

In addition to graphic and phonetic metaphor there are also intermediate forms of metaphor, such as animalistic metaphor. This was the case on the Poetical Stela of Thutmosis III above (p. 159), where the phonetic signifier *ḥr* signified the *king* (fig. II2-35):

[215] Goldwasser, *From Icon to Metaphor*, 11-16. She uses the term 'graphic metaphor'.
[216] *Ibid*., 1, 11-16.
[217] *Ibid*., 17, 40-41, 71-76.
[218] *Ibid*., 71.
[219] *Ibid*., 71, 73.
[220] *Ibid*., 42, 76. Concerning *rḫy.t*: subjectivity is not only indicated by the arms in adoration, but may also be indicated by the pose of the bird, see Griffin, 'A Reinterpretation of the Use and Function of the Rekhyt Rebus in New Kingdom Temples' in Cannata & Adams (eds.), *Current Research in Egyptology 2006*, 67.
[221] *prw*, 'Überschuss': WB I, 526.14-15; *ḥr*, 'auf': WB III, 131.3-4.

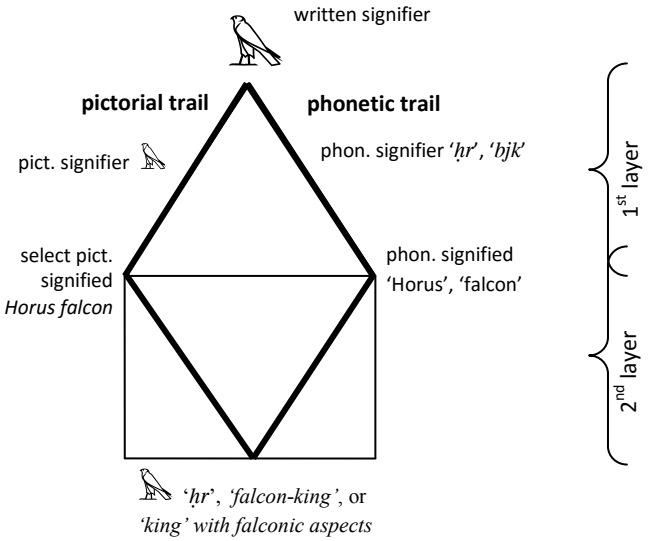


Fig. II2-35 Animalistic metaphor making use of both pictorial and phonetic trails. The pictorial signifier 𓅃 and the phonetic signifier '*ḥr*' are applied onto a new sign, the signified of which is a fusion of the original signified Horus falcon and the new signified king, the latter originally deriving from a sign *ny-sw.t*, 'king'.

In fig. II2-35 there is no pictorial metaphor as the signifier 𓅃 remains the same; it is not merged with semantic qualities or characteristics that belong to a different sign, the end product being a fusion such as 𓅃𓆑.[222] Neither is there phonetic metaphor as there is no similarity in sound pattern between '*ḥr*' ('falcon') and '*ny-sw.t*' ('king'). Phonetic metaphor is furthermore ruled out because in applying the sound pattern *ḥr* onto the new signified *king*, the original signified *Horus falcon* is *not discarded*; qualities and characteristics of this signified are retained. It is rather a case in which both pictorial and phonetic signifiers (𓅃 and '*ḥr*') are applied in their original form onto a new signified without discarding both their original signifieds. As with graphic and phonetic metaphor, animalistic metaphor takes into account only specific qualities and aspects, which stand in metonymic relation to both signs that take part in the ultimate metaphor.[223]

To summarize, what we learn from Jakobson's theory and the criticism it has received is that signs can convey multiple layers of meaning which are generated by metaphorical and metonymical processes of selection and combination, based on degrees of similarity and contiguity, but also that these processes are intimately related to deepen and enrich the meaning of signs. In normal communicative behavior they may, but oftentimes do not lead to *either* metaphoric *or* metonymic outcomes. Rather, metonymical processes support and generate metaphorical outcomes. Metaphor is therefore often used as umbrella term (a metaphor) to refer to rhetoric communication in general, including metonymy under its wings (an orientational metaphor). Inspired by Goldwasser, we can now incorporate these multiple rhetoric meanings into our analysis of the marks from Deir el-Medina. Thus, the mark 𓂝 can

[222] Which Goldwasser calls surrealistic as it is impossible in the known world, thus pictorially metaphoric; see *From Icon to Metaphor*, 11-12.
[223] Animalistic metaphor is a combination of aspects of phonetic as well as pictorial metaphor. It is neither purely pictorial metaphor, nor purely phonetic metaphor. In other words, animalistic metaphor is not a third class of metaphor, but rather a degree of pictorial and phonetic metaphor. More combinations between pictorial and phonetic metaphor are possible, for instance relating specifically to objects instead of animals (for which, however, no terminology exists in the literature).

be considered a phonetic metaphor for the name *Jn(j)-ḥr-ḫʿw* (fig. II2-36). The phonetic aspect, that is the sound pattern *jn(j)*, is extracted from the first layer of meaning and applied to a new signified on the basis of similarity with the sound pattern *Jn(j)-ḥr-ḫʿw*. The original pictorial and phonetic signifieds are therewith nullified. All the marks that are related to hieroglyphic or hieratic script in form as well as in value follow a similar process: for instance *kɜ* for '*kɜsɜ*'; or *ms* for '*Ms*'; , *ḥr* for '*Ḥr*'; *ḳs* for '*Ḳs*'; *ḫnmw* for '*Ḫnmw-ms*'; *šd* for '*Pɜ-šdw*'; and *jmn.t* for '*Nb-jmn.t*'.

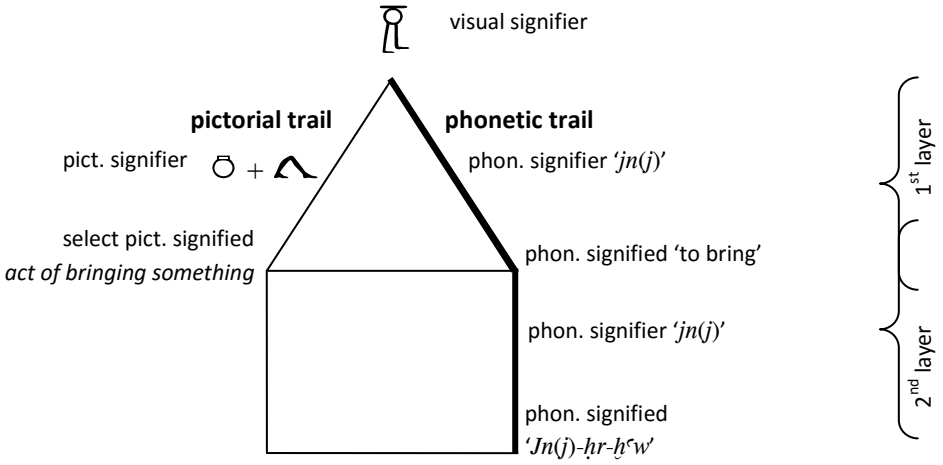


Fig. II2-36 The mark as phonetic metaphor.

Cases of animalistic metaphor can also be discerned. In the example of fig. II2-37 phonetic and animalistic metaphor are combined:

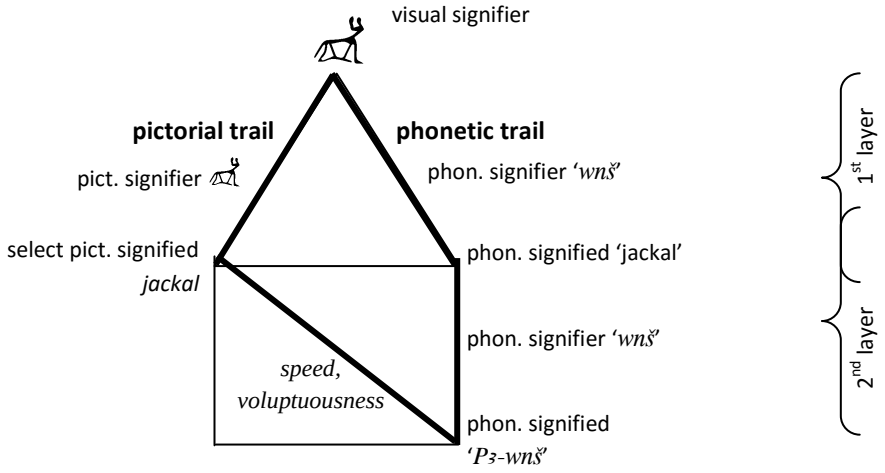


Fig. II2-37 The mark as phonetic animalistic metaphor.

The mark was used by workman *Jmn-nḫt* (xii), son of *Ḥɜy* (vii). *Jmn-nḫt* (xii) was nicknamed *Pɜ-wnš*, presumably because certain qualities or aspects of the jackal were ascribed to him, such as speed or perhaps voluptuousness, a characteristic ascribed to his father who was called *wnš djdj* on ostracon DeM 1038.[224] In this case, the outcome of the animalistic metaphor is represented in the phonetic trail, because in contrast to the example in fig. II2-35 the phonetic signifier '*wnš*' is similar to the nickname '*Pɜ-wnš*'. We can therefore speak of phonetic animalistic metaphor.

[224] Goldwasser, *From Icon to Metaphor*, 62 (speed); Dorn, *Arbeiterhütten im Tal der Könige*. Text- und Katalogband, 190-191, note f (voluptuousness).

The mark can also be said to signify according to animalistic metaphor (fig. II2-38), but it differs from in that a metonymic process is involved. As a hieroglyph, occurs in script as a determinative, but with the phonetic values *jmɜḫ* and *mɜɜ* it is attested already in 19th dynasty Deir el-Medina.[225] These sound patterns seem at first not to signify the referent, that is, the workman *Mnnɜ* (i), and it is therefore uncertain whether the phonetic trail takes part in the signification of . The mark does undergo a metonymic process in the pictorial trail. As selected part of the falcon, it stands in metonymic part-for-whole relation to the falcon, but it also stands in metonymic organ-for-activity relation to the emphasized quality of *sight*. Via animalistic metaphor, this quality may have been projected onto *Mnnɜ* (i): being a draftsman, he was perhaps known to have had a sharp eye, or he wished to emphasize that aspect himself. This signification could, then, have been supported by the phonetic signifier *mɜɜ* in the phonetic trail, which via the phonetic signified 'to see' may have emphasized the same quality.

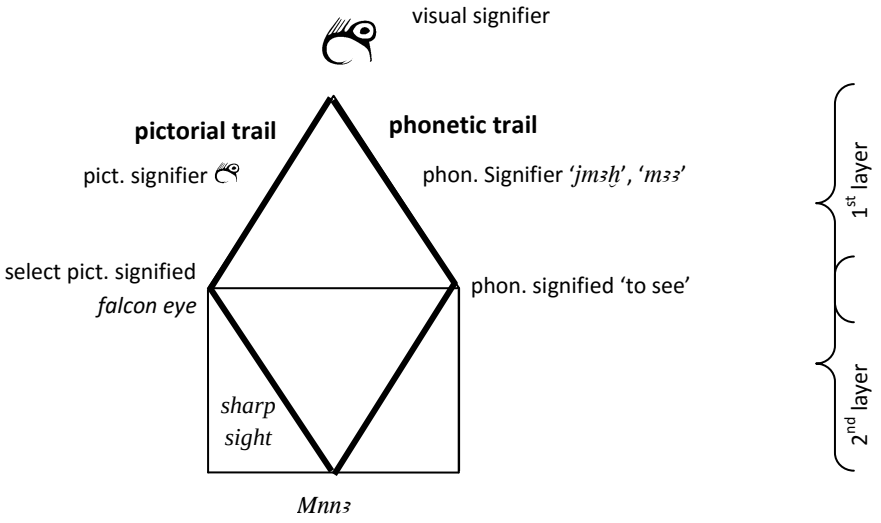


Fig. II2-38 Animalistic metonymic metaphor of the mark , perhaps supported by the phonetic signifier '*mɜɜ*'.

Two further considerations are depicted in figs. II2-39 and 40. Both place larger emphasis on metonymic processes. In fig. II2-39 the mark is equivalent to the hieroglyph . As a pictorial signifier it signifies the select pictorial signified, or concept, *scribe's outfit*. As a pictorial signifier *sš* it signifies the phonetic signified 'scribe'. In fact, the relation between the hieroglyph and the phonetic signified 'scribe' in the first layer of meaning is already a metonymic one, which via the pictorial signified signifies profession via tool. In the second layer of meaning we find the same metonymic relation when the pictorial signifier signifies the man who is *sš n pɜ ḫr*. That is, this specific identity mark is not so much used by one individual in particular, but by every individual who at one time acted as *sš n pɜ ḫr*, for instance *Jmn-nḫt* (v) on BM EA 50716 (fig. II2-33). But we also find another metonymic relation, namely in the phonetic trail when the phonetic signified 'scribe' signifies *Jmn-nḫt* (v) as profession for person. Both metonymic relations build the metaphor in which *Jmn-nḫt* (v) through the mark is identified as having the qualities and characteristics of a scribe.

[225] Haring, Review of J. Moje in *BiOr* 67.1-2 (2010), 27-28.

Fig. II2-40 presents a more complex and less certain suggestion. The mark 𓀀 is thought to represent a level in the pictorial trail.[226] Although it does not occur as a hieroglyph with phonetic value in script, it is seen as determinative in the words 𓇋𓃀𓀀 *sbꜣ*, 'level', 𓎛𓀀 *ḫḫ*, 'to level', and in 𓎛𓀀𓏏 or 𓀀𓉔𓏏 *ḫḫ.t*, a toponym denoting either Aswan, Elephantine, Philae, Sehel or Bigeh.[227] The words *sbꜣ* and *ḫḫ* are both attested in the New Kingdom, while the toponym is only attested in the Late and Graeco-Roman periods. A suggestion that concerns the identity of the man who used this mark is based on the frequent occurrence of 𓀀 in TT 360: it may have identified the 19th dynasty foreman *Ḳꜣḥꜣ* (i).[228] The exact signification remains unclear, but there are at least two possibilities. The first, and most likely one, is the following: via the pictorial trail we might consider the level to refer to the man via a metonymic tool-for-profession relation. A level could well have served as a mark for the office of foreman. The foreman *Sn-nḏm* (i), in fact, was buried with a level,[229] and it may be no coincidence that the mark encountered most often in his tomb (TT1) included the same form: 𓀀𓏴. Via the phonetic trail another possibility might be suggested: even though 𓀀 has no phonetic value, it may as a classifier signify the sound patterns *sbꜣ, ḫḫ* and *ḫḫ.t*. There is no phonetic metaphor between these sound patterns and the name of *Ḳꜣḥꜣ* (i), but could it via phonetic metaphor and the metonymic relation place-for-person signify him as originating from *ḫḫ.t* or another locality with the sound patterns in its name?

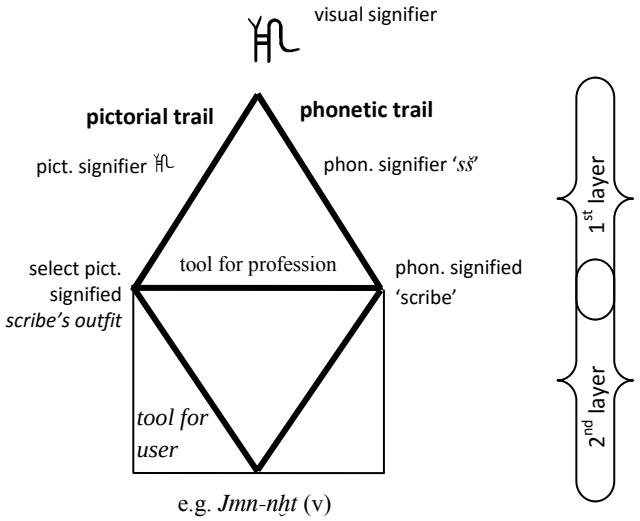


Fig. II2-39 Metonymical processes in the mark 𓇋.

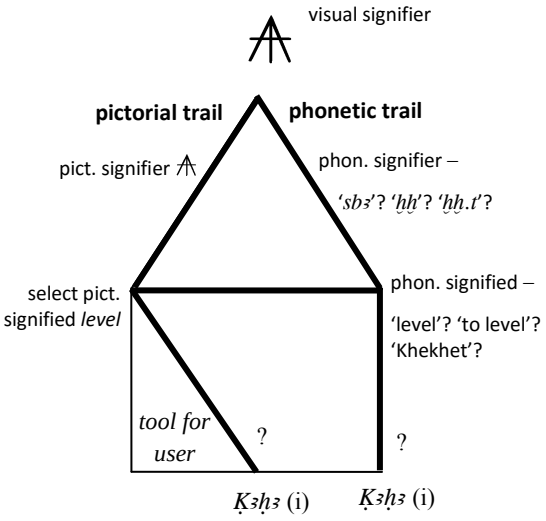


Fig. II2-40 Metonymical processes in the mark 𓀀.

To conclude, we can clearly recognize processes of metaphor and metonymy in the signification of the marks. Meaning is generated in multiple layers that may specify the nature of the relation between mark and workman. In some cases this relation is motivated by phonetic similarity (phonetic metaphor), in other cases by animalistic qualities and characteristics (animalistic metaphor), in yet

[226] See mark II 042a in Tables I3-1 and I3-2.
[227] WB IV, 86.15; WB III, 331.12-13; Gauthier, *Dictionnaire des Noms Géographique*, 186-187. See also Bresciani, 'Il tempio tolemaico di isi ad assuan' in Bresciani (ed.), *Assuan*, 27-31, who relates the writing of the toponym in Ptolemaic times to the god Khnum of Elephantine.
[228] Cf. Soliman, *Of Man and Marks* (unpublished dissertation), chapter 3.
[229] Cairo JE 27258; Desroches-Noblecourt (ed.), *Ramsès le Grand*, 174-175. For *Sn-nḏm* and the mark 𓀀 see also pp. 199-200 and 270 below.

other cases by both (phonetic animalistic metaphor), and in still other cases by a direct connection or association of a mark with a workman in the course of pictorial and/or phonetic processes of signification. However, there remain major problems, first of all the ubiquitous lack of referents: in figs. II2-36 to 40 the names of workmen have been used as ultimate signifieds, but it will be clear that *the individual workmen must be the ultimate signifieds*. Thus, we can still not differentiate between as phonetic metaphor for *Jn*(*j*)-*ḥr*-*ḫʿw* (i) and *Jn*(*j*)-*ḥr*-*ḫʿw* (ii). The problem becomes worse when we realize that the same mark was at some point also used by a workman named *Ḳnnɜ*; is it still a phonetic metaphor? Another problem is the accommodation of marks that do not seem to be related to script, but that do also not represent anything concrete, i.e. the abstract-geometric marks such as or (cf. fig. II2-12). Do these marks follow the pictorial trail? Do they go through metaphoric and/or metonymic processes? The theories and models thus far have left them rather insignificant.

At this point it is time to involve Peirce's theory, in particular his referentiality and sign typology, as it offers precisely what we need to overcome the remaining problems.

Whereas the dyadic tradition and its concept of meaning had been primarily relational in that meaning was derived from inherent structural relations between signifier and signified on the feature level of the sign and between signs on the semantic level of the system, the triadic tradition was referential:[230] it presented a pragmatic theory in which signs referred to their material environment. The triadic tradition as a school of modern semiotics was founded by the American philosopher and logician Charles Sanders Peirce (1839-1914)[231] around the same time De Saussure was formulating his theory, but the two were not familiar with each others' work. In contrast to the adherents of the dyadic tradition, Peirce was not focused on linguistics; rather, he departed from the axiom that cognition, thought and man are semiotic in their essence.[232] In fact, the entire universe was perfused with signs in Peirce's pansemiotic view.[233] Consequently, his theory was not founded in the structural study of linguistics, but rather in philosophy, mathematics and logic.

Three topics from Peirce's theory are of central concern for the marks from Deir el-Medina: his sign model and the inclusion of referentiality that allows us to see the individual workmen as the ultimate referents of the identity marks (section a); his idea of successive processes of 'semiosis', called 'unlimited semiosis' by Eco, that allows us to accommodate multiple layers of meaning (section b); and his typological study of sign-functions that offers a different perspective on the processes that generate meaning considered metaphoric and metonymic in the dyadic tradition (section c).

a. Semiotics according to Peirce: his model of the sign

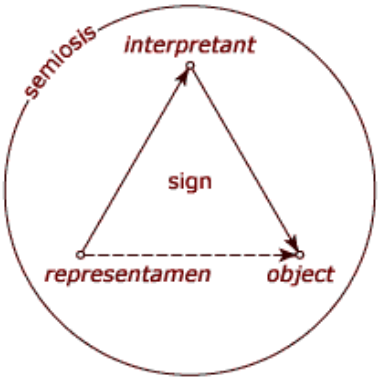


Fig. II2-41 Peirce's model of the sign. http://cseweb.ucsd.edu/~ddahlstr/cse271/peirce.php

[230] Chandler, *Semiotics*, 18.
[231] Earlier triadic models had already been employed by Plato, Aristotle, the Stoics, Leibniz and Husserl, cf. this Part, chapter 1; Chandler, *Semiotics*, 33; Nöth, *Handbook of Semiotics*, 90. As regards Peirce, his writings consist of thousands of papers, but he never wrote a coherent outline of his complete theory of signs. The standard edition of his works from which his writings are usually quoted is *Collected Papers* (Peirce 1931-1958, edited by Hartshorne & Weiss, published by Harvard University Press, Cambridge Massachusetts). When in the following we refer to Peirce and a paragraph number, we refer to this work. Cf. Nöth, *Handbook of Semiotics*, 40.
[232] *Ibid*., 41.
[233] *Ibid*..

Although Peirce did not himself offer a visualization of his concept of the sign, fig. II2-41 shows a representation of the triadic sign as it has now become conventional.[234] The Peircean sign consists of three components:

- The *representamen* is purely the form of the sign as it is perceived or otherwise experienced. Some scholars after Peirce have renamed it *sign vehicle* or *symbol*, but we stick to Peirce's term. He defined it as the first correlate of a sign, 'a vehicle conveying into the mind something from without';[235]
- The *interpretant* is the sense made of the representamen. It is a mental image in the mind of an interpreter, which is evoked by the representamen and by various contextual, situational and cultural factors at the moment of interpretation. For Peirce, it was the ultimate meaning of a sign: meaning is not contained within signs, but arises in their interpretation;[236]
- The *object* is something beyond the representamen and interpretant to which the sign as a whole refers. This is the potentially material referent of the sign.[237] The broken line between the representamen and the object in fig. II2-41 indicates that there is not necessarily any observable or direct relationship between these components; that is, the object may be related to the representamen only via the interpretant.

The interaction between the three components is called *semiosis*, Peirce's term for what was called signification by De Saussure and his followers. The most obvious difference with the dyadic sign model is the addition of the object: it allocates materiality and reality a places within the process of semiosis,[238] and therefore makes the analysis of signs more detailed and more complete than the dyadic model does. But the object is *potentially* material; that is, it is not necessarily confined to things that exist in the real world and may comprise abstract concepts or mental imaginary entities instead.[239] In fact, Eco, although not denying existent objects in an extra-semiotic world, warns for a 'referential fallacy': the erroneous assumption that 'the content' (i.e. the meaning or interpretant) of a sign has anything to do with a corresponding object in the real world. The question whether the object is real is, in his view, not relevant for semiosis; 'the possible states of the world' are not a necessary condition for semiosis, which is only concerned with 'intensional semantics' as opposed to 'extensional semantics'.[240] However, as explained in section 1.a.5 the inclusion of the workmen as real-world individuals in the semiosis of the marks from Deir el-Medina is rather a referential *necessity*, and Peirce's object is the element through which we can tie the marks to their users and to the functional and historical reality in which they were used. Since in the case of the marks the individual workmen take the place of the 'object', we would suggest to henceforth speak of 'referent'.

[234] Cf. Chandler, *Semiotics*, 29-30; Ogden & Richards, *The Meaning of Meaning*, 11.
[235] Nöth, *Handbook of Semiotics*, 42; Chandler, *Semiotics*, 29.
[236] Nöth, *Handbook of Semiotics*, 43; Peirce § 8.179; Ezziani, 'Une application d'un modèle sémiotique à l'art rupestre' in *Sahara* 18 (2007), 131 ; Chandler, *Semiotics*, 29, 32.
[237] Nöth, *Handbook of Semiotics*, 42-43 ; Chandler, *Semiotics*, 29.
[238] *Ibid.*, 33.
[239] Nöth, *Handbook of Semiotics*, 42-43; Peirce §§ 2.330, 1.538.
[240] Eco, *A Theory of Semiotics*, 58-59; Sørensen, 'The Concept of Metaphor according to the Philosophers C.S. Peirce and U. Eco', *Signs* 5 (2011), 161-162.

b. Unlimited semiosis

With the object being the innovation of the triadic model, some theorists have considered the representamen and the interpretant to be analogous to the signifier respectively signified (or expression respectively content) of the dyadic tradition. However, this is an oversimplification of the Peircean model, which implies more than different terms for similar concepts. First, the representamen is not merely a psychological sound pattern; although it is not necessarily material, it can be any form a sign can be perceived or experienced in.[241] Second, the interpretant contains a quality that the signified does not have. This is apparent already in Peirce's description of the process of semiosis:[242]

> *'A sign … [in the form of a representamen] is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea which I have sometimes called the ground of the representation'.*

Peirce argues that the representamen creates in the mind of an interpreter another *sign*. That sign he calls the interpretant. This is not a case of misuse of the term 'sign' where Peirce would describe the interpretant *an sich* as 'sign'.[243] It rather reveals his idea that a representamen could lead to a series of successive interpretants, potentially *ad infinitum*.[244] Eco describes this as 'unlimited semiosis'.[245] It means that Peirce's interpretant has the potential to become itself a representamen in the mind of the interpreter, starting a whole new process of semiosis and thus creating a new sign. Peirce said that 'the interpretant is nothing but another representation', thus 'The meaning of a representation can be nothing but a representation'.[246] Any initial interpretation of a representamen can be reinterpreted.[247] The processes are depicted in fig. II2-42:

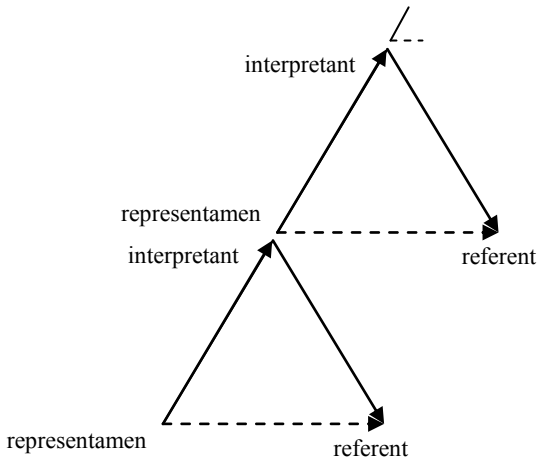


Fig. II2-42 Unlimited semiosis. Based on Chandler, *Semiotics*, 32 (fig. 1.6).

[241] Peirce called the representamen a 'perceptible object' (§ 2.230); Nöth, *Handbook of Semiotics*, 42; Chandler, *Semiotics*, 29 (i.e. I do not agree with Chandler's statement on p. 31 where he says 'The representamen is similar in meaning to De Saussure's signifier').
[242] *Ibid.*, 29; Peirce §2.228.
[243] The term 'sign' is often used loosely in semiotics: Chandler, *Semiotics*, 30.
[244] *Ibid*., 31; Peirce §1.339, 2.300-3.
[245] Eco, *A Theory of Semiotics*, 68-69.
[246] Peirce §1.339; Eco, *A Theory of Semiotics*, 69.
[247] Chandler, *Semiotics*, 31.

While in theory interpretants can infinitely succeed each other to form new processes of semiosis, in practice, Peirce realized, the processes are cut short by the practical constraints of everyday life; some object is always graspable in the end.[248] With regard to the marks from Deir el-Medina the theory of unlimited semiosis allows to accommodate multiple layers of meaning that are significant in that they allow to distinguish between individual workmen via the referent and therefore allow to study the marks in their social and historical context of use. Thus, unlimited semiosis allows a diachronic analysis of the marks and their users. Let us look at the example that is so familiar by now (fig. II2-43):

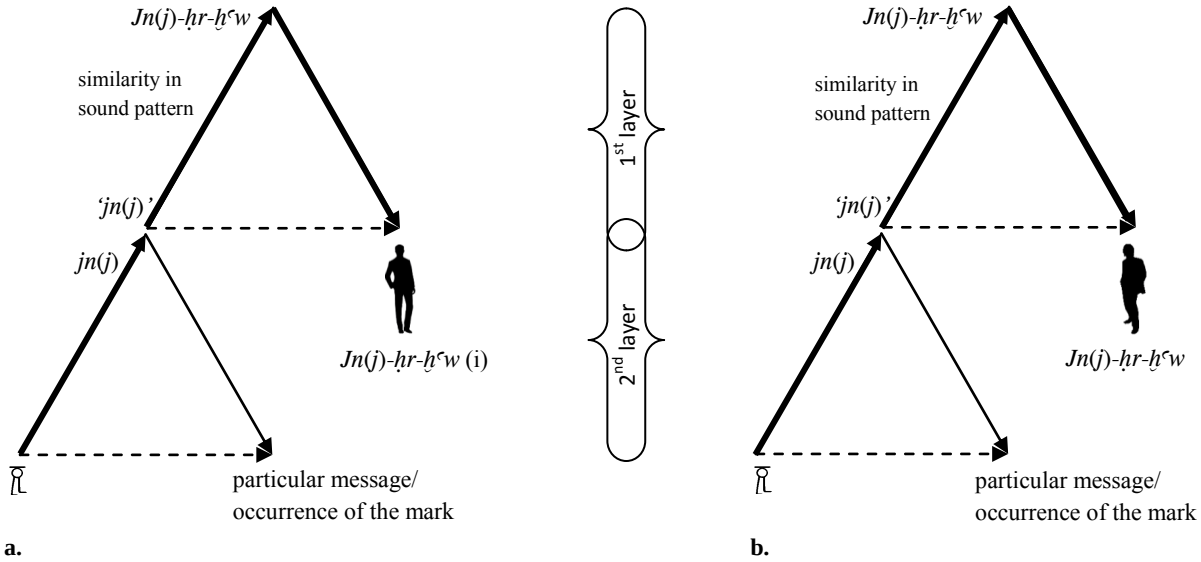


Fig. II2-43a. Successive semiosis of the mark 𓄿𓂋 with *Jn(j)-ḥr-ḫʿw* (i) as referent; **b**. Successive semiosis of the mark 𓄿𓂋 with *Jn(j)-ḥr-ḫʿw* (ii) as referent.

In a first level of meaning and a first process of semiosis, the representamen of the mark is its form as we perceive it: 𓄿𓂋. The interpretant can be said to be the sound pattern that was linked to the hieroglyphic equivalent 𓇋 of the representamen and was thus evoked in the mind; that is *jn(j)*. The referent can be said to be a particular occurrence of the mark. This is the component to which the use of the mark as a whole refers. In a second level of meaning and a successive process of semiosis, the interpretant can become a representamen anew. This is the level where the difference between the two marks 𓄿𓂋 (fig. II2-43a and b) becomes clear. The interpretant *jn(j)* becomes the new form of the sign: in dyadic terms a phonetic signifier, sound pattern or expression '*jn(j)*'. As such, it may lead to a new interpretant on the basis of similarity in sound pattern: the name *Jn(j)-ḥr-ḫʿw*. The referents of the new representamen and interpretant are the individual workmen *Jn(j)-ḥr-ḫʿw* (i) respectively *Jn(j)-ḥr-ḫʿw* (ii), to whom the marks in their entirety refer. The referents in the second level are crucial to the interpretation of the marking system; their inclusion allows to study the 'identity' part in the concept 'identity marks'.

[248] Chandler, *Semiotics*, 80; Gallie, *Peirce and Pragmatism*, 126.

In figs. II2-43a and b both marks 𓂋 are phonetic metaphors because the interpretant-having-become-representamen leads to the second interpretant on the basis of similarity in sound pattern. But at the end of the previous section a third player in the field was introduced: *Ḳnnɜ* (i), who used the mark at least in year 26 of Ramesses III.[249] Phonetic metaphor appears to be ruled out. How do we get from first representamen to ultimate referent?

We may suggest that another process of semiosis is necessary:

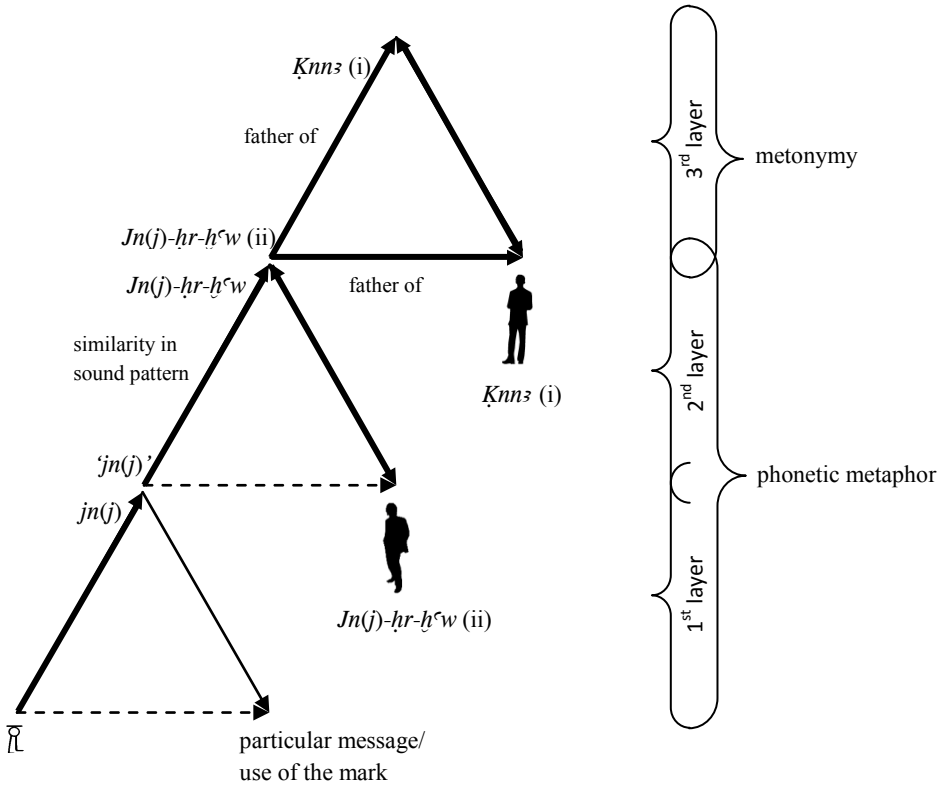


Fig. II2-44. Successive semiosis of the mark 𓂋 with *Ḳnnɜ* (i) as referent.

We know that *Ḳnnɜ* (i) was the son of *Jn(j)-ḥr-ḫʿw* (ii).[250] In the semiosis of the mark 𓂋 from fig. II2-43b, therefore, we may consider the interpretant *Jn(j)-ḥr-ḫʿw referring to Jn(j)-ḥr-ḫʿw (ii) = Jn(j)-ḥr-ḫʿw (ii)* as a new representamen in a successive process of semiosis. As such, *Jn(j)-ḥr-ḫʿw* (ii) may have evoked the idea of his son *Ḳnnɜ* (i) in the mind of an interpreter; the idea of the father evokes the idea of the son. The idea of *Ḳnnɜ* (i) is, then, the new interpretant, and the person of *Ḳnnɜ* (i) is the referent. Representamen refers to interpretant and to referent according to a 'father–son relation'. Thus a new sign is created, the underlying process of which is not one of phonetic metaphor but, as one could suggest, one of metonymy, where the relation between representamen, interpretant and referent is one of contiguity in that *Jn(j)-ḥr-ḫʿw* (ii) and *Ḳnnɜ* (i) are directly connected within the family circle.

[249] On the basis of hieratic parallels the mark 𓂋 must refer to *Ḳnnɜ* (i) on the marks ostraca Ashmolean Museum 1086 and IFAO ONL 0317. The parallel for the Ashmolean ostracon, dating to Ramesses III, year 26 IV *pr.t*, is O.Turin 57153 (*Ḳnnɜ* (i) appears on *sw* 14); the parallels for the IFAO ostracon, dating to Ramesses III, year 26 IV *ɜḫ.t*, are O.Berlin 12629; O.DeM 142 and O.DeM 150.

[250] Davies, *Who's Who at Deir el-Medina*, chart 3.

The reader familiar with the prosopography of Deir el-Medina will remark that there is also a family relation between *Jn(j)-ḥr-ḫʿw* (i) and *Ḳnnɜ* (i) and the two *Jn(j)-ḥr-ḫʿw*'s themselves: *Jn(j)-ḥr-ḫʿw* (ii) was the grandson of *Jn(j)-ḥr-ḫʿw* (i), and *Ḳnnɜ* (i) was therewith the great grandson of *Jn(j)-ḥr-ḫʿw* (i).[251] We could, then, present the semiosis of the mark 𓄿 in a chain of five successive processes as in fig. II2-45. However, on the basis of Peirce's remark that the endless process is cut short by the practical constraints of everyday life, we suggest that in daily practice the mind of an interpreter would not go back as far as four generations, which in this case is approximately 80 years. The connection between the mark 𓄿 and the referent *Ḳnnɜ* (i) in the daily administration is more likely to have been made on the basis of a 'father–son relation' with 𓄿 in its first two layers of meaning referring to *Jn(j)-ḥr-ḫʿw* (ii) as in fig. II2-43b, than on the basis of a 'great-grandfather–great grandson relation' with 𓄿 in its first two layers referring to *Jn(j)-ḥr-ḫʿw* (i). Analogous to the frequent practice in which family names were repeated every second generation[252] we might suggest that the successive processes of semiosis also went back approximately two generations (cf. the gradations in grey in fig. II2-45). More cognitive effort needed to link a workman to his proper mark would render the system less efficient. In the process of arriving at *Ḳnnɜ* (i) from the phonetic metaphor 𓄿 for *Jn(j)-ḥr-ḫʿw* (i) in fig. II-45 especially the interposition of *Ḥɜy* (iv) disrupts a smooth and fast cognitive process: he is rather attested with a different mark, 𓌙.[253]

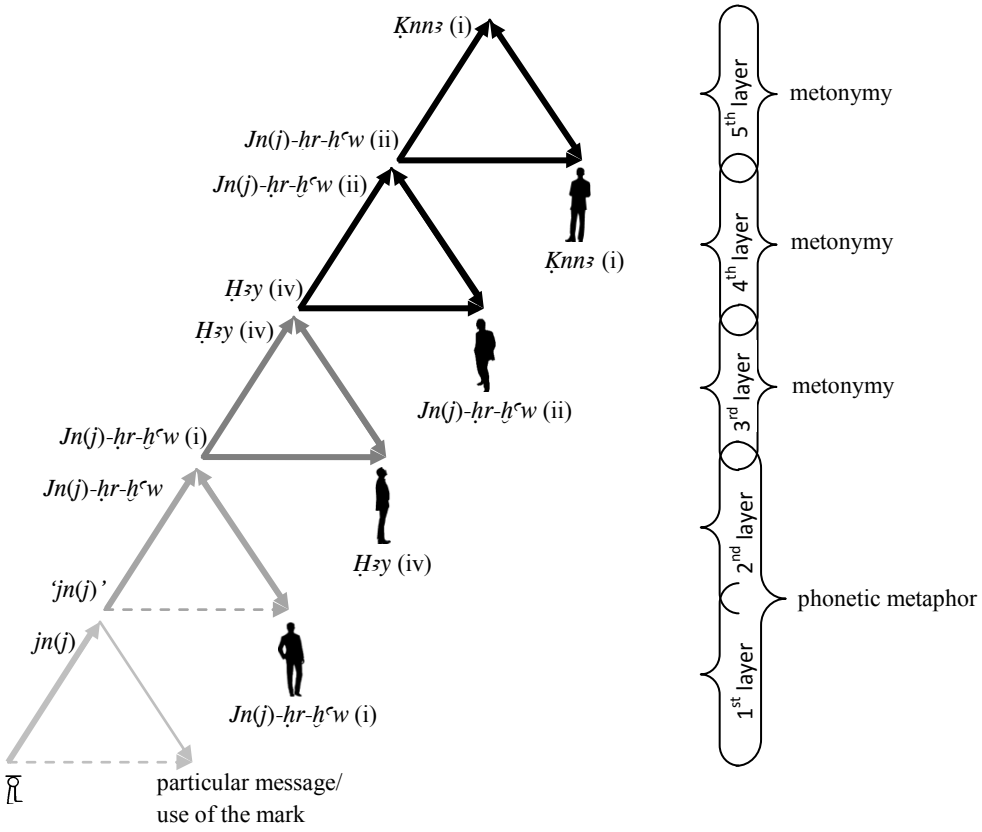


Fig. II2-45 Successive processes of semiosis of the mark 𓄿 going back four generations. It is suggested that in the daily life of Deir el-Medina an interpreter will have made the connection between 𓄿 and *Ḳnnɜ* (i) on the basis of an underlying process of semiosis in which 𓄿 is a phonetic metaphor for *Jn(j)-ḥr-ḫʿw* (ii), rather than that he would have calculated the mark 𓄿 back to *Jn(j)-ḥr-ḫʿw* (i) as forefather of the family.

[251] Davies, *Who's Who at Deir el-Medina*, chart 3.
[252] *Ibid*., xxiii.
[253] Cf. Soliman, *Of Marks and Men* (unpublished dissertation), chapter 4. See also the next chapter, pp. 231-232.

Although the Peircean model and its quality of unlimited semiosis with as a constraint the practicalities of everyday life can be used to analyze the semiosis of the marks from Deir el-Medina and visualize why a certain workman used a specific mark (i.e. visualize the use of the marks in their social and functional context), problems and questions remain. They all center around the fact that the marking system includes marks of different nature. Thus, first, in figs. II2-43 to 45 we used only the example of the phonetic metaphor , but what happens when we want to accommodate marks other than those inspired by hieroglyphic or hieratic script, which have no phonetic value? Consequently, second, how can we accommodate pictorial as well as phonetic interpretations, as Goldwasser did for hieroglyphic script in the dyadic model? How, for instance, can we accommodate a mark such as in fig. II2-37, which generates meaning along both pictorial and phonetic trails? There is only one route to the interpretant that does not allow the for the accommodation and visualization of a cooperation of pictorial and phonetic metaphor. Similarly, the accommodation of and the possibilities suggested for the generation of meaning by are troublesome. Clearly we need to incorporate Goldwasser's pictorial and phonetic trails into Peirce's model. But before we do that in the synthesis of section 3, we must first address a third question: in addition to 'similarity in sound pattern' and the 'father–son relation', what sorts of relations determine the semiosis between the sign-components? What modes of semiosis are there? How do signs behave according to Peirce, and what sorts of sign functions does he therefore acknowledge?

c. Typological study of sign functions

c.1. Peirce's triadic typology

Peirce's typological study of sign-functions is often designated as a 'sign typology' and therewith understood as a classification of distinct 'types of sign'.[254] However, a classification of signs often happens on the basis of form, comparable to what we have done in the Venn-diagram in chapter 1 of the Paleography, and does not take into account the actual semiosis of the signs. It is thus necessary to investigate the relations that exist between the sign-components and to come to a typology of *sign-functions*:[255] of the manners in which signs function and according to which the sign-components interact in order to generate meaning. This is what Peirce did and his 'sign typology' is therefore better understood in terms of a typology of different 'modes' of semiosis according to which signs function.[256] He developed an elaborate typology, in which he first arrived at ten major classes of semiotic modes, and later to ten trichotomies of 66 and even 3^{10} = 59,049 classes of semiotic modes.[257] As the most fundamental, however, he considered the following three modes, to which we will confine ourselves:[258]

The symbolic mode

Signs that function in the symbolic mode are based purely on conventional association between the sign-components. The representamen is related to the interpretant and the referent according to convention: the relation is agreed upon and must be learned. Signs in the symbolic mode are thus also

[254] Chandler, *Semiotics*, 36.
[255] A term borrowed from Eco, *A Theory of Semiotics*, 48-50, who in turn borrowed it from Hjelmslev, *Prolegmena* (1963), 33-41.
[256] Chandler, *Semiotics*, 36.
[257] Nöth, *Handbook of Semiotics*, 44.
[258] *Ibid*.; Peirce §2.275.

interpreted according to learned rules.[259] Examples are found particularly in mathematics and in language.[260] Words, for instance, are linked to their meaning on the basis of agreement. There is no reason behind the designation for a tree being 'tree';[261] this is simply agreed upon by English language-speakers. It is a convention that must be learned by anyone who wants to master the language. De Saussure considered the relation of convention, the symbolic mode, the only relation that exists between signifier and signified. In his focus on linguistics the conventional nature of the linguistic sign was a primary principle of *sémiologie*.[262]

We find the symbolic mode in the first layer of semiosis of 𓐍, in the relation of the representamen with the sound pattern *jn*(*j*) of its hieroglyphic equivalent.

The iconic mode

When a sign functions in the iconic mode, its representamen is experienced as resembling or imitating the referent; it recognizably looks, sounds, feels, tastes or smells like it. It is thus similar to it in that it possesses some of its qualities. The relation between the representamen and interpretant is iconic in that the former 'excites analogous sensations in the mind'.[263] The iconic mode is found particularly in photography and portraiture: a portrait excites in the mind an image that is analogous to it, and resembles the referent (the one portrayed) in several respects. But signs in the iconic mode are not necessarily visual. When running water evokes in the mind the idea of having to go to the bathroom, the referent being the toilet flush, this is iconic semiosis as well.

We find the iconic mode in the second layer of semiosis of 𓐍, in the similarity between the sound pattern *jn*(*j*) and the second interpretant *Jn*(*j*)-*ḥr*-*ḫʿw*.

The indexical mode

When a sign functions in indexical mode, its representamen is directly connected to the interpretant and referent in some physical or causal way. This connection is characterized by a relation of contiguity between representamen on the one hand, and interpretant and referent on the other. The relation can be observed or inferred from the representamen. The representamen *indicates* something, and this something does not depend on 'the interpreting mind', but is necessarily existent in its direct connection to the representamen.[264] Therefore, of the three modes, indexicality is the only one that can serve as evidence of the factual existence of the referent.[265] That makes indices the signs *par excellence* to be used as signs of accountability: images on a security camera *indicate* the thief in a robbery, signatures *indicate* the rights and obligations of individuals, identity marks *indicate* the presence or absence of workmen. On the level of the sign system, all identity marks thus function as indices. Other examples of signs that function in the indexical mode we find in nature: smoke is an indexical representamen for its direct cause fire ('where smoke is, is fire'), or tracks such as broken twigs or footprints are indexical representamina for the physical presence of a living creature. But also medical symptoms being representamina for a condition that causes them, or measuring instruments

[259] Chandler, *Semiotics*, 38-39; Peirce §§1.369, 2.292, 2.297.
[260] Chandler, *Semiotics*, 39.
[261] De Saussure, *Course in General Linguistics*, 67.
[262] *Ibid*., 36-37.
[263] Peirce §§2.279, 2.299; Chandler, *Semiotics*, 40.
[264] *Ibid*., 42; Peirce §§2.285, 2.92, 2.310.
[265] Chandler, *Semiotics*, 43.

being representamina for the weather conditions that cause the measurements are signs functioning in the indexical mode of semiosis.

We find the indexical mode in the third layer of semiosis of , in the contiguity between father *Jn*(*j*)*-ḥr-ḫʿw* (ii) and son *Ḳnnɜ* (i).

The symbolic, iconic and indexical modes of semiosis are three basic modes, but since each of them can be identified in one of the layers of semiosis of the mark for *Ḳnnɜ* (i), they are clearly not mutually exclusive in the overall semiosis of signs. Indeed, instead of three separate and independent modes, we usually deal with signs that function according to any combination of two or three of the modes. Peirce himself already insisted that 'it would be difficult if not impossible to instance an absolutely pure index, or to find any sign absolutely devoid of the indexical quality'.[266] Similarly, semioticians generally maintain that there are no pure icons, for even a portrait is made according to stylistic conventions.[267] Jakobson called the signs functions that combine two or three modes 'transitional varieties' and noted that in each variety one mode is dominant, with dominance being determined by context and the way in which a sign is used.[268] Thus, whether the symbolic, the iconic or the indexical mode is dominant in the semiosis of a sign primarily depends on the particular usage, context and purpose of that sign. The same sign may function in iconic or indexical mode in one context, and in symbolic mode in another. This is precisely the case in Egyptian hieroglyphic script, where the same sign may on one occasion convey meaning primarily along the pictorial trail and on another primarily along the phonetic trail. When, for instance, the sign is used primarily for its sound pattern in the word *prw*, 'surplus', the symbolic mode of semiosis is dominant; it even completely neutralizes its iconic sign function. But when is used in the word *pr* 'house', the iconic mode of semiosis is the one in which the sign most directly functions.[269]

Although transitional varieties may thus combine any two or three of the basic modes of semiosis, and any basic mode can be dominant to greater or lesser degree all depending on usage, purpose and context, there are four domains in which they are logically found:

- In the transition between the symbolic and indexical modes we naturally find sign-varieties that function as *indexical symbol* or as *symbolic index*.[270] Examples of indexical symbols are demonstratives such as 'that', 'this', 'here' or 'there'. They are indexical in that they directly indicate something that is the referent, but as linguistic signs they remain symbols based on convention: we interpret the words according to the learned rule that the sound pattern or written form of 'that', for instance, directly indicates something beyond the representamen and interpretant to which the sign as a whole refers. Examples of symbolic indices are diagrams or registers in a book. They make use of words and numbers that are conventional symbols the meaning of which must be learned, but they are indexical in that their main function is to point to the locations where

[266] Peirce §2.306; Chandler, *Semiotics*, 44.
[267] *Ibid*., 40-41.
[268] Jakobson, 'Language in Relation to Other Communication Systems' in Jakobson, *Selected Writings* II, 700; Jakobson, 'Quest for the Essence of Language' in Waugh & Monville-Burston, *On Language*, 411; Chandler, *Semiotics*, 44.
[269] Cf. previous section (1.d.3). WB I, 511.7 and 526.14-15.
[270] The main mode is indicated by the noun, the mode with which it is combined by the adjective. The meaning of both terms *indexical symbol* and *symbolic index* and the difference in meaning between the two terms is then generated especially in the syntagmatic dimension, in the syntactical combination of the words.

certain topics can be found. Another example of symbolic indices are traffic lights, which make use of the conventional meanings attached to the symbols green, red and yellow, but as indices directly relate to the action to be taken;[271]

- In the transition between the symbolic and iconic modes we find sign-varieties that function as *iconic symbol* or *symbolic icon*. Iconic symbols can be linguistic signs that express a relation of similarity, for instance onomatopoeia such as 'cuckoo' or 'ping pong'. They are iconic in that they refer to an animal or sport via a phonic sound pattern that is similar to this animal or sport in some respect or quality, but they remain conventional in their graphic mode of representation.[272] Examples of symbolic icons are the portraits already mentioned. As a matter of fact, it has been remarked that any picture 'is essentially a symbol, not a duplicate of what it represents'.[273] All artists, photographers and painters alike, employ stylistic conventions and thus, as Peirce stated, 'any material image … is largely conventional in its mode of representation'; 'likeness is aided by conventional rules';[274]

- In the transition between the indexical and iconic modes we find sign-varieties that function as *indexical icon* or *iconic index*. Examples of indexical icons are video-images of a security camera that show a thief at work. They are iconic in that they evoke an analogous idea of the thief in the mind of an observer, but indexical in that they directly point in the direction of the thief as the actual, existent referent who is the cause of the robbery. Examples of iconic indices are laundry labels that make use of iconic pictures such as , , , , , , , , , , or through which they directly point at the actions that must or must not be undertaken;

- In the transition between all three modes we find sign-varieties that function according to any combination in which each of the modes contributes to the generation of meaning. An example provided by Chandler is the map: 'A map is indexical in pointing to the locations of things, iconic in representing the directional relations and distances between landmarks, and symbolic in using conventional symbols (the significance of which must be learned)'.[275] All three modes take part in a correct understanding of the map. Also, when laundry labels include pictures such as , , , or , they switch from functioning in an *iconic indexical* mode to functioning in a *symbolic iconic indexical* mode, simply because they now include letters and numbers which are symbols that function on the basis of convention. Thus, whether a laundry label, or in fact any kind of sign, functions in one or the other (combination of) sign-function(s) depends on its particular instance.

To summarize, on the basis of how a sign is used, for what purpose and in which context, we can analyze its semiosis as taking place in the symbolic, the iconic, or the indexical mode, or in any combination of the modes. Peirce's typology is, then, not a classification of signs in general, but of the

[271] Jakobson, 'Language in Relation to Other Communication Systems' in Jakobson, *Selected Writings* II, 700.
[272] Chandler, *Semiotics*, 41, 44, referring to Jakobson, 'Quest for the Essence of Language' in Waugh & Monville-Burston, *On Language*, 411; and referring to Lyons, *Semantics* I, 105.
[273] Langer, *Philosophy in a New Key*, 67, referred to by Chandler, *Semiotics*, 40.
[274] Peirce §2.276; Chandler, *Semiotics*, 41; Jakobson, 'Visual and Auditory Signs' in Jakobson, *Selected Writings* II, 335.
[275] Chandler, *Semiotics*, 44.

semiotic modes according to which signs in particular instances function. The three basic modes and the transitions between them lead to seven domains in which signs can function:

The symbolic domain
The symbolic indexical or indexical symbolic domain

The indexical domain
The indexical iconic or iconic indexical domain

The iconic domain
The iconic symbolic or symbolic iconic domain

Any combination of the symbolic, indexical and iconic domains

c.2. Metaphor and metonymy in terms of Peirce's typology

The reader may have noted a considerable overlap between the description of the basic modes of semiosis and the description of metaphor and metonymy given in section 1.d.1. Processes of metaphor and metonymy can in fact be discerned in the modes of semiosis. Roughly said:

- Signs or transitional varieties that make use of the indexical mode may be conceived of as metonymic in that the semiosis between the sign components is based on a direct connection of contiguity between representamen and interpretant and referent;

- Signs or transitional varieties that make use of the iconic mode may be conceived of as metaphoric in that the semiosis between the sign components is based on similarity in qualities or characteristics and on the projection of these qualities and characteristics onto an interpretant and referent by an iconic representamen. However, it has been remarked that signs in the iconic mode resemble what they represent *only in some respects*. Chandler states that 'What we tend to recognize in an [iconic] image are analogous relations of parts to a whole'.[276] Metonymic processes therefore support the generation of meaning by metaphoric signs in iconic mode;

- Signs that make use of the symbolic mode may be conceived of as literal in that the representamina of signs in the symbolic mode fulfill their function regardless of any similarity or contiguity with their referent: 'a *symbol* … fulfills its function regardless of any similarity or analogy with its object and equally regardless of any *factual* connection therewith'. 'A genuine symbol is a symbol that has a general meaning'.[277] There is nothing rhetoric about the denotation of a tree by means of the linguistic sign 'tree', in sound or in writing. Certainly, signs in the symbolic mode such as words or phrases can be used rhetorically in a particular context and for a particular purpose. However, they are then no longer pure symbols; they are indexical or iconic symbols instead. Thus, in the transitional varieties of the symbolic mode the metonymic and metaphoric processes come into play again and they undo the literal nature of the purely symbolic sign.

[276] Chandler, *Semiotics*, 40, referring to Langer, *Philosophy in a New Key*, 67-70.
[277] Peirce §§5.73, 2.293; Chandler, *Semiotics*, 39.

When we merge the basic modes of semiosis and their transitions from Peirce's typology with the processes of metaphor and metonymy, we arrive at the following description of the seven domains in which signs may function:

The domains of the three basic modes:

Literal symbolic domain

Metonymic indexical domain

Metonymic metaphoric iconic domain

The domains of the transitional modes

Metonymic indexical symbolic and symbolic indexical domain

Metonymic metaphoric indexical iconic and iconic indexical domain

Metonymic metaphoric iconic symbolic and symbolic iconic domain

Metonymic metaphoric semiosis in any combination of the three modes in an all-integrated domain

Or in tabular form:

Table II2-2 The modes of semiosis merged with the processes of metaphor and metonymy

		Literal (conventional)	Metonymic metaphor (selective similarity)	Metonymy (contiguity)
Symbol		X		
	symbolic index, indexical symbol			X
Index				X
	indexical icon, iconic index		X	
Iconic			X	
	iconic symbol, symbolic icon		X	
	any combination of the 3 modes		X	

c.3. The typology of sign functions incorporated in the Venn-diagram

It is tempting to consider the seven domains characterized by three main modes of semiosis and their transitional forms in terms of the Venn-diagram of visual communication. In incorporating this typology in a Venn-diagram, the latter becomes not a visual classification of signs, but a visual classification of the semiosis of signs. Thus a sign that functions according to a specific mode or combination of modes can be allocated to one of the following domains (fig. II2-46):

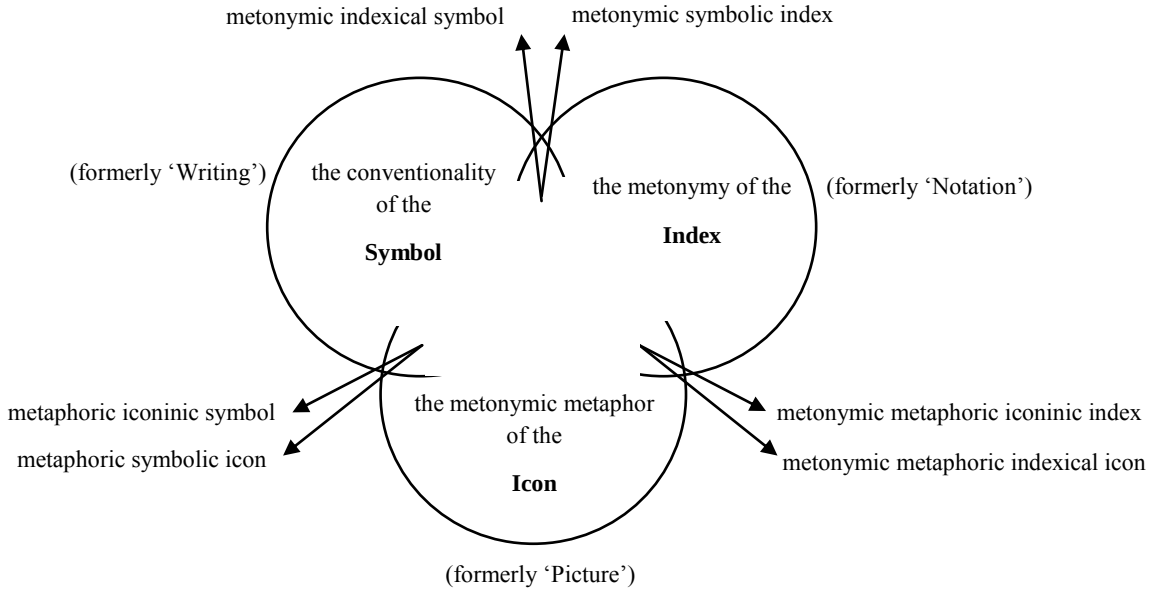


Fig. II2-46 Peirce's typology of sign functions and the processes of metaphor and metonymy integrated in a Venn-diagram. The diagram shows a classification of sign functions according to the fundamental modes of semiosis of signs used for a particular purpose in a particular context. The same sign may be allocated to different domains when used for different purposes in different contexts.

In the upper right, we have replaced 'Writing' with 'Symbol': the signs in this domain convey meaning on the basis of convention. At the bottom we have replaced 'Picture' with 'Icon': the signs in this domain convey meaning on the basis of resemblance or similarity in experience. In the upper left we have replaced 'Notation' with 'Index': signs in this domain convey meaning on the basis of contiguity. To test what this version of the Venn-diagram means for the marks from Deir el-Medina, we may recall the marks that were depicted in Figs. II2-36 to 40 in the previous section 1.d.3: , , , and :

– iconic symbol (fig. II2-36)

We have described this mark referring to *Jn*(*j*)*-ḥr-ḫʿw* (i) and (ii) as a phonetic metaphor, but in the Peircean typology it would function as an iconic symbol. It is primarily conventional in that it makes use of the phonetic sound pattern '*jn*(*j*)', but iconic (therefore metonymic metaphoric), in that it selects this sound pattern and projects it onto the interpretant *Jn*(*j*)*-ḥr-ḫʿw* on the basis of similarity. When the mark refers to *Ḳnnɜ* (i), it becomes an index that is based on the iconic symbol of which *Jn*(*j*)*-ḥr-ḫʿw* (ii) was the referent, but now refers to *Ḳnnɜ* (i) on the basis of the familial contiguity relation of father and son.

– symbolic icon (fig. II2-37)

We have described the mark as a phonetic animalistic metaphor, but in the Peircean typology it would function as a symbolic icon. It is primarily iconic (thus metonymic metaphoric), in that it projects certain selected qualities of the animal onto the workman *Jmn-nḫt* (xii) and also refers to him via the similarity in sound pattern of *wnš*, 'jackal', and *Jmn-nḫt*'s nickname *Pɜ-wnš*. But precisely because it makes use of this phonetic pattern to support and make explicit the animalistic metaphor, the symbolic mode is involved in the ultimate semiosis.

– indexical icon (fig. II2-38)

We have described the mark as an animalistic metaphor, but in the Peircean typology it would function as an indexical icon. It is primarily iconic in that it selects the quality of a falcon's sharp sight and projects this onto the workman *Mnnɜ* (i), but it is indexical in that the representamen emphasizes this quality by representing part for whole and directly connecting organ with activity.

- symbolic index (fig. II2-39)

We have described the mark as generating and conveying meaning according to metonymic and phonetic processes along the pictorial and phonetic trails. In the Peircean typology it would function as a symbolic index. It is symbolic in that its conventional sound pattern *sš* is the word for 'scribe' in ancient Egyptian language, but it is indexical in that the representamen directly indicates this profession via representation of the tools necessary to exercise it, and in that, ultimately, the mark as a symbol is directly connected to the individual who exercised the profession of scribe.

– index and/or iconic symbol? (fig. II2-40)

We have proposed that this mark may generate and convey meaning according to metonymic and/or phonetic processes along the pictorial and phonetic trails. In the Peircean typology this mark could be said to function as an index and/or as an iconic symbol. It functions as an index when it is directly connected to *Ḳɜḥɜ* (i) if he would have used this mark via the metonymy tool-for-profession. When, however, the semiosis rather lies in the fact that an equivalent sign occurs as determinative in words from the Egyptian language and when it uses the phonetic sound patterns of these words to refer to *Ḳɜḥɜ* (i), the sign rather functions in the symbolic mode and via iconicity projects the sound pattern onto the name *Ḳɜḥɜ*.

The sign-functions are tabulated in Table II2-3 and positioned in the Venn-diagram in fig. II2-47:

Table II2-3 Identity marks considered in the integration of the modes of semiosis and the processes of metaphor and metonymy

		Literal (conventional)	Metonymic metaphor (selective similarity)	Metonymy (contiguity)
Symbol				
	symbolic index, indexical symbol			
Index				?
	indexical icon, iconic index			
Icon				
	iconic symbol, symbolic icon	?		
	any combination of the 3 modes			

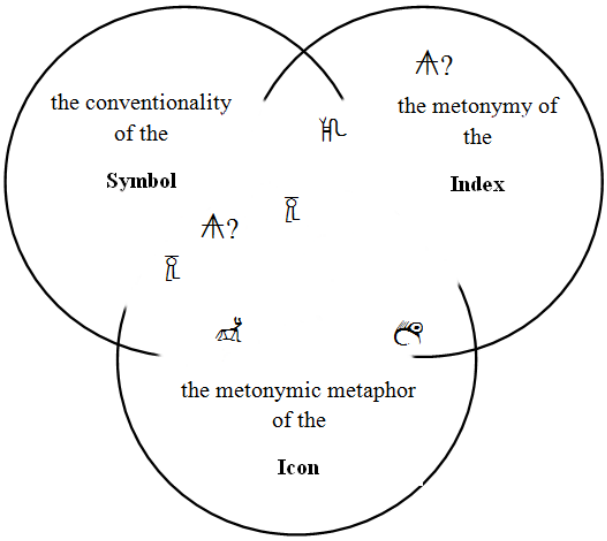


Fig. II2-47 The identity marks from Table II2-3 positioned in a Venn-diagram that integrates the seven domains of semiosis and the processes of metaphor and metonymy.

Thus, by merging the modes of semiosis that result from Peirce's typology of sign functions with the processes of metaphor and metonymy we can refine the analysis of the nature of the modes according to which the marks function and generate meaning.

While Jakobson remarked that one or two modes of semiosis may be dominant, Chandler furthermore remarks that signs may shift in dominant mode(s) over time. His example is the Rolls-Royce, originally an *index* of wealth because one had to be wealthy to own one, but social usage has led to its becoming a conventional *symbol* of wealth.[278] In regard of the marks from Deir el-Medina, it follows that we must reckon with possible changes in modes of semiosis, especially when marks from dynasty 18 also seem to occur in dynasties 19 and 20; their semiosis might have changed. The marks and , for instance, both occur in all periods. The first, equivalent to the hieroglyphic sign *wsr*, is probably a phonetic metaphor, or iconic symbol, in dynasties 19 and 20 when it was used by *Wsr-ḥɜ.t* (i) and *Wsr-ḥɜ.t* (ii) respectively. The second, equivalent to the hieroglyphic sign *ms*, was probably a phonetic metaphor at least in dynasty 20 when it was used by *Ms* (iv). But we do not know whether the extraction of the sound patterns and their application onto the names of workmen was also the dominant mode of semiosis in dynasty 18. Perhaps semiosis rather took place in the iconic mode (e.g. when is similar to the mark in that it is an animalistic metaphor represented by part of the animal), or by means of an indexical relation (e.g. when makes use of the sound pattern *ms* to refer indexically, via the word *ms-ʿɜ.t* 'stoneworker', to a workman on the basis of a metonymy 'profession for person').[279] Another example is the mark . In Part I we have suggested a graphic development of this mark from a rather clumsy form apparently unrelated to script in dynasty 18 to a better equivalent of the hieroglyph *nbw* in dynasty 20. We do not know the identity of the workman who

[278] Chandler, *Semiotics*, 44, referring to Culler, *Structuralist Poetics*, 17.
[279] For *ms-ʿɜ.t*, see WB II, 138.19.

used this mark, but the radical change in form toward the hieroglyph 𓂝 may be reason to reckon with an increase of the symbolic mode in the semiosis of this mark in dynasty 20.

From Chandler's remark on shifting modes, it furthermore follows that the nature of semiosis of an entire sign system may change over time, especially when it concerns an open system, which is liable to the addition of new signs when necessary: such a system may contain signs that generate meaning predominantly in the indexical and iconic modes in an earlier stage, while an increase of signs that make use of the symbolic mode may shift the nature of semiosis of the entire system more toward that particular domain.

One is reminded, of course, of the shift in the Venn-diagram as represented in fig. I1-8**:** in Part I chapter 1 we suggested a shift from Elkins' domains 'Picture' and 'Notation' toward 'Writing' for the marks from Deir el-Medina on the basis of the formal composition of the marking system in dynasty 18 and in dynasties 19 and 20. In this respect, it is interesting to note that Peirce himself speculated about a universal historical development from iconic and indexical modes of semiosis ('Picture' and 'Notation') toward the symbolic mode ('Writing'). Chandler remarks that Peirce did not present this as necessarily a matter of *progress* toward an 'ideal symbolic form', as the theories of evolution presented in the Introduction of this dissertation did, but he nevertheless noted a trend from icon to index to symbol.[280] Iconicity, he argued, was the original default mode of semiosis. He defined it as 'the most primitive, simple and original of the categories'.[281] Signs were 'originally in part iconic, in part indexical'. However, over time, linguistic signs developed a more symbolic and conventional character; symbols came 'into being by development out of other signs, particularly from icons'.[282]

Chandler himself agrees that 'The historical evidence does indicate a tendency of linguistic signs to evolve from' the indexical and iconic modes toward the symbolic mode.[283] In fact, many scholars who study visual communication in cultures all over the world consider a trend from icons and indices to symbolic linguistic writing. Especially signs in the indexical mode they consider direct precursors to linguistic signs in the symbolic mode. They mainly focus on animal tracks and traces as examples: tracks and traces direct one to the creature that created them and are therefore indexical. They were followed by our ancestor hunters and gatherers in search of food, who 'read' them in sequence to restore a past event: the presence of prey and the direction it went. The cultural historian Ginzburg argued that our 'track-reading' ancestors were the first story-tellers 'because only hunters knew how to read a coherent sequence of events from the silent (though not imperceptible) signs left by their prey'.[284] In the words of Perrin tracks were read in a linear sequence that could be mapped conceptually to a sequence in time,[285] leading to a narrative of past reality. Through the millennia, this 'emerging narrative' would have led to the invention of writing as it is currently understood: through the indexical representation of creatures to abstract symbols that refer to these creatures as mental concepts in the early beginnings of mnemonics.[286] A similar idea was expressed by the linguist

[280] Chandler, *Semiotics*, 46; Peirce §2.299.
[281] Chandler, *Semiotics*, 46; Peirce §§2.90, 2.92.
[282] Chandler, *Semiotics*, 46; Peirce §2.302.
[283] Chandler, *Semiotics*, 46-47.
[284] Ginzburg & Davin, 'Morelli, Freud and Sherlock Holmes', *History Workshop* 9 (1980), 13; Evans Pim, 'From Marks to Ogham', *Re:marks* 1 (2013), 90.
[285] Perrin is independent researcher who focuses his study on semiotics and brand marketing. 'Marks: A Distinct Subcategory Within Writing as Integrationally Defined', *Elsevier Language Sciences* 33 (2011), 625.
[286] Evans Pim, 'From Marks to Ogham', *Re:marks* 1 (2013), 90-91.

Landaburu, who considered 'footprints in mud, human and animal scent or broken branches' – all marks that have a direct connection between their form and the event that led to their creation – as marks that 'become signs to those who are able to interpret them'.[287] He argues that such early indexical connections with a function related to identification and territoriality, developed to anchor complex mnemonic uses and subsequently developed into writing. The idea that indices play a prominent role in the origin of writing is furthermore present in the Chinese legend of Cang Jie as the inventor of the Chinese script. The legend records that Cang Jie, official at the court of the Yellow Emperor, 'found inspiration in the marks left behind by birds and animals and the markings on animals themselves, realising that the graphic reproduction of the tracks or marks could be used to represent and keep record' of the Emperor's land.[288]

The idea that indexical tracks and markings were early forms of mnemonic systems that developed into symbolic writing relates to a zoosemiotic frame for the interpretation of mark making in general. By arguing that symbolic writing originates in iconic and indexical signs found in nature the adherents want to emphasize that the term 'writing' thus implies more than merely human linguistic writing, and rather encompasses all forms of visual communication, made intentionally or not, by humans and other species alike. Like Peirce, they do not consider symbolic writing to be the superb and ideal end-product of a linear evolution, but merely remark a general trend. Although we have identified this trend in the formal composition of the marks from Deir el-Medina, from a pictorial and abstract-geometric appearance to forms more conform hieroglyphic and hieratic script, the question is now to what extend we can discern *a semiotic trend* from iconic and indexical modes of semiosis toward more conventional symbolic modes of semiosis. In the next section we merge aspects of the dyadic and triadic semiotic traditions into an integrated model in which we accommodate the semiosis of the identity marks in order to find out whether we can answer that question.

[287] Landaburu, referred to in Evans Pim, 'From Marks to Ogham', *Re:marks* 1 (2013), 92.
[288] *Ibid.*, 91; Lewis, *Writing and Authority in Early China*, 197-202, 273.

3 SYNTHESIS

There is clearly not *one* semiotic theory or model that serves the full accommodation and explanation of the identity marks from Deir el-Medina. Each theory and model offers relevant perspectives and methodological tools, but also has its shortcomings. In this synthesis we present a suggestion for the integration of the following aspects from the theories and models that were discussed in sections 1 and 2, which are considered relevant in the analysis of the semiosis of the marks:

- The idea of multiple trails along which signification takes place in Goldwasser's adaptation of the dyadic sign model;
- The inclusion of the referent offered by the triadic sign model;
- The multiple levels of unlimited semiosis in which meaning is generated in successive processes of semiosis in the triadic tradition;
- The processes of metaphor and metonymy in the generation of meaning which the dyadic tradition identified on the basis of the structural functioning of the syntagmatic and paradigmatic dimensions of sign systems;
- The symbolic, iconic and indexical modes of semiosis in which the triadic tradition incorporates the processes of metaphor and metonymy.

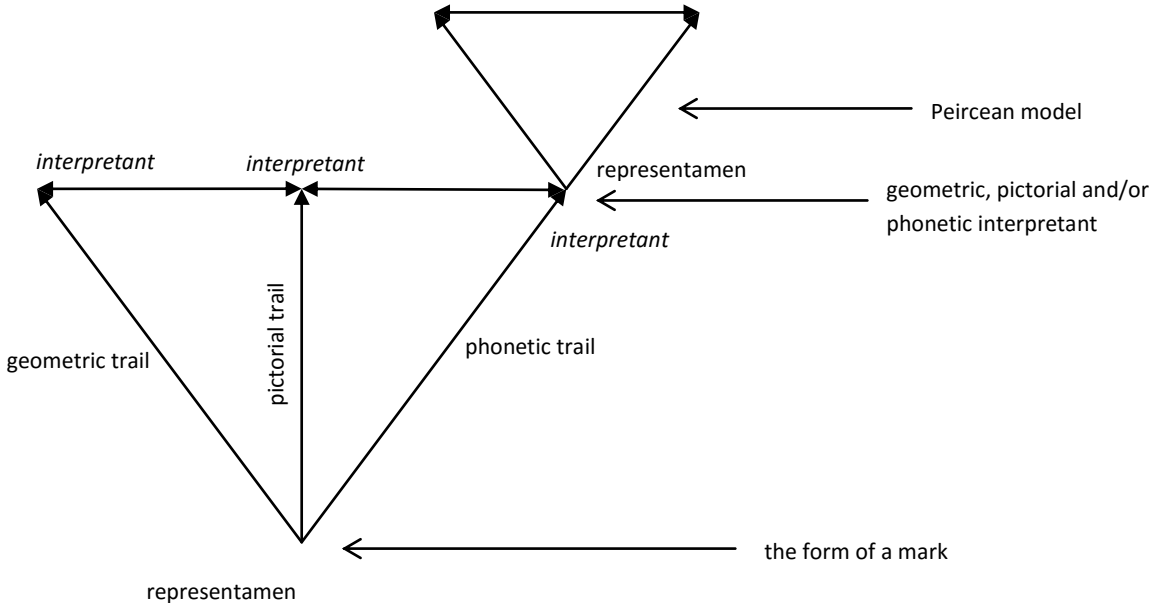


Fig. II2-48 Synthetic model for the accommodation of the marks from Deir el-Medina.

The model that is suggested (fig. II2-48) is built up of successive triangles that represent successive levels of semiosis. In the first level are found the pictorial and phonetic trails, which Goldwasser argued are necessary for the semiotic analysis of the pictorial hieroglyphic script. But we must add a third trail for the marks: a trail that allows the accommodation of abstract geometric forms. This first triangle can be considered semiotically dyadic in that it has a representamen, that is the form of the mark that is our point of departure, and a phonetic and/or pictorial and/or abstract geometric interpretant which it evokes. In a second level we accommodate the Peircean model: the interpretant of the first level becomes representamen in this second level and leads to a new interpretant and to a

referent. The interpretant in the first level can be a full phonetic interpretant, in which case the representamen in the second level is a phonetic representamen, a written or spoken sound pattern. But the interpretant can also be a pictorial or abstract geometric interpretant, or a combination in that the generation of meaning takes place along two or all three of the trails. Depending on the nature of the interpretant, the second level, the Peircean model proper, starts off along or in between the phonetic, pictorial or geometric trails.

a. Examples: dynasties 19-20 and dynasty 18

It is best to look at some examples. The first examples, presented in figs. II2-49 to 56, date to dynasties 19 and 20; the examples in figs. II2-57 to 61 date to dynasty 18. In figs. II2-49 and 50 we find the mark 𓂝, which is well-known by now; a brief explanation will suffice. In fig. II2-49 the mark, referring to the workman *Jn(j)-ḥr-ḫʿw* (i) follows the phonetic trail. It leads to the interpretant *jn(j)*, which in the second level becomes the phonetic representamen '*jn(j)*'. It evokes the interpretant *Jn(j)-ḥr-ḫʿw* on the basis of similarity in sound pattern: the process is one of phonetic metaphor, or one of iconic symbol. The alternative trails in the first level would lead to a pictorial interpretant, which is the *act of bringing something*, or a geometric interpretant, which is evoked by the lines of which the mark consists, but the latter is irrelevant here. Since these interpretants do not play a role in the semiosis of the mark in this particular usage and context, the semiosis along the phonetic trail could be weighed with 100%. In fig. II2-50 the same process takes place in the first two levels for the mark 𓂝 referring to *Jn(j)-ḥr-ḫʿw* (ii). When the mark 𓂝 refers to *Ḳnnɜ* (i), a third level is added. The interpretant-referring-to-the-referent in the second level, i.e. *Jn(j)-ḥr-ḫʿw* (ii), becomes the new representamen which, according to the metonymic relation of family contiguity refers to *Ḳnnɜ* (i) as the interpretant and referent in the third level. The semiosis in the first two levels is phonetic metaphoric, where 𓂝 is an iconic symbol; the semiosis in the third level is metonymic, where 𓂝 is an index for *Ḳnnɜ* (i).

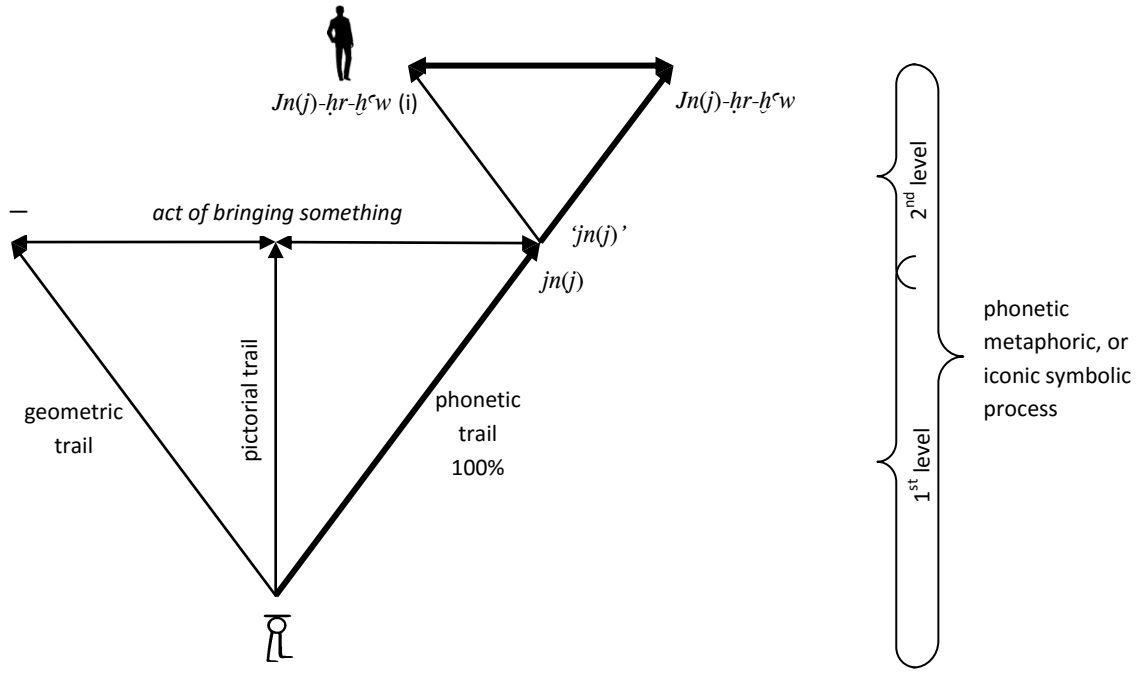


Fig. II2-49 𓂝 referring to *Jn(j)-ḥr-ḫʿw* (i) as a phonetic metaphor, or iconic symbol.

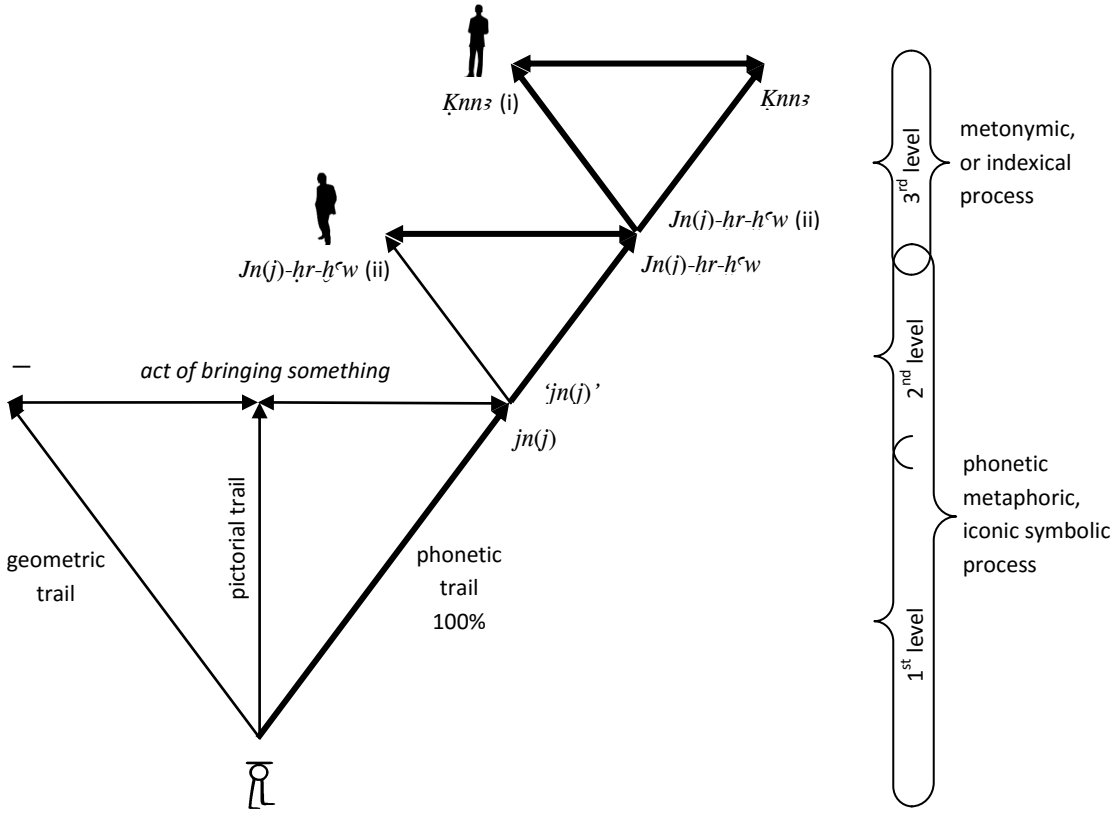


Fig. II2-50 𓇋 referring to *Ḳnnɜ* (i) as a phonetic metaphor, or iconic symbol, in the first two levels of semiosis, and as metonymy, or index, in a third level of semiosis according to the familial contiguity of ‘father – son’.

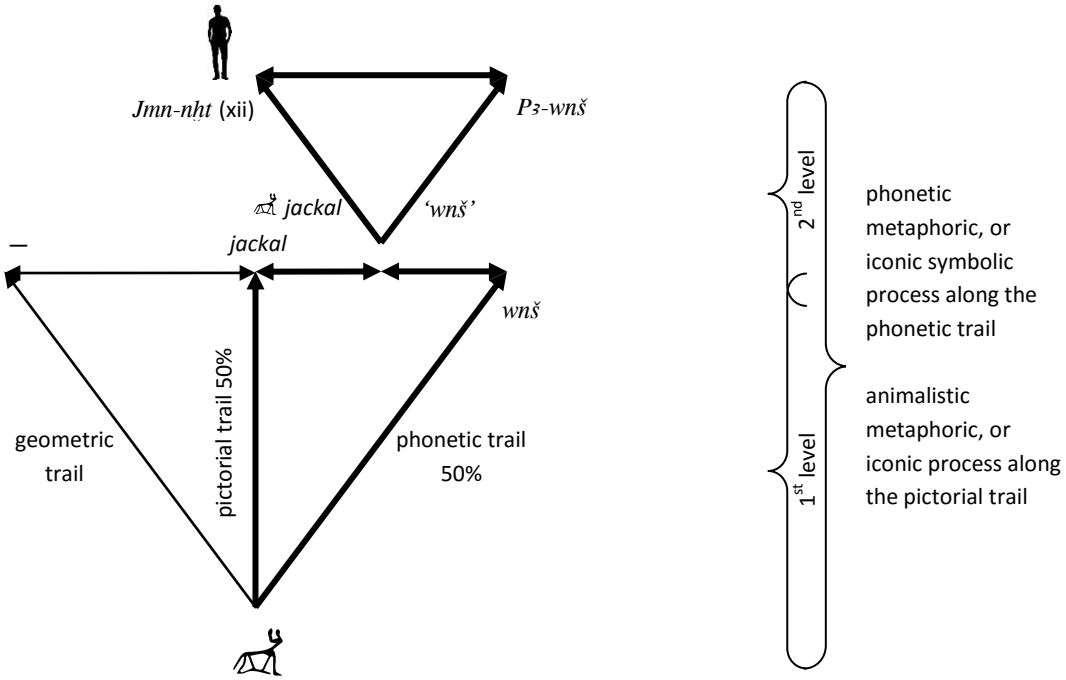


Fig. II2-51 𓃒 referring to *Jmn-nḫt* (xii) as a phonetic metaphor, or symbolic icon along the phonetic trail, and as animalistic metaphor, or icon, along the pictorial trail.

The example of 𓃒 is shown in fig. II2-51. In the first level, the semiosis takes places along both the phonetic and the pictorial trails: both the phonetic sound pattern and the pictorial representation are significant as explained above in section 1.d.3 and fig. II2-37. The sound pattern '*wnš*' contributes in the second level of semiosis by evoking the interpretant *Pꜣ-wnš* on the basis of similarity; that is, as a phonetic metaphor. The pictorial interpretant *jackal* contributes by evoking aspects of the jackal that were projected onto *Jmn-nḫt* (xii), who is the referent because he was nicknamed *Pꜣ-wnš* on the basis of animalistic metaphor. The mark is therefore an icon, and because it makes use of the phonetic trail, it can be called a symbolic icon. Since the pictorial and phonetic trails both contribute to the second level of semiosis, which therefore starts off from their midst, the semiosis along these trails could be weighed each with 50%.

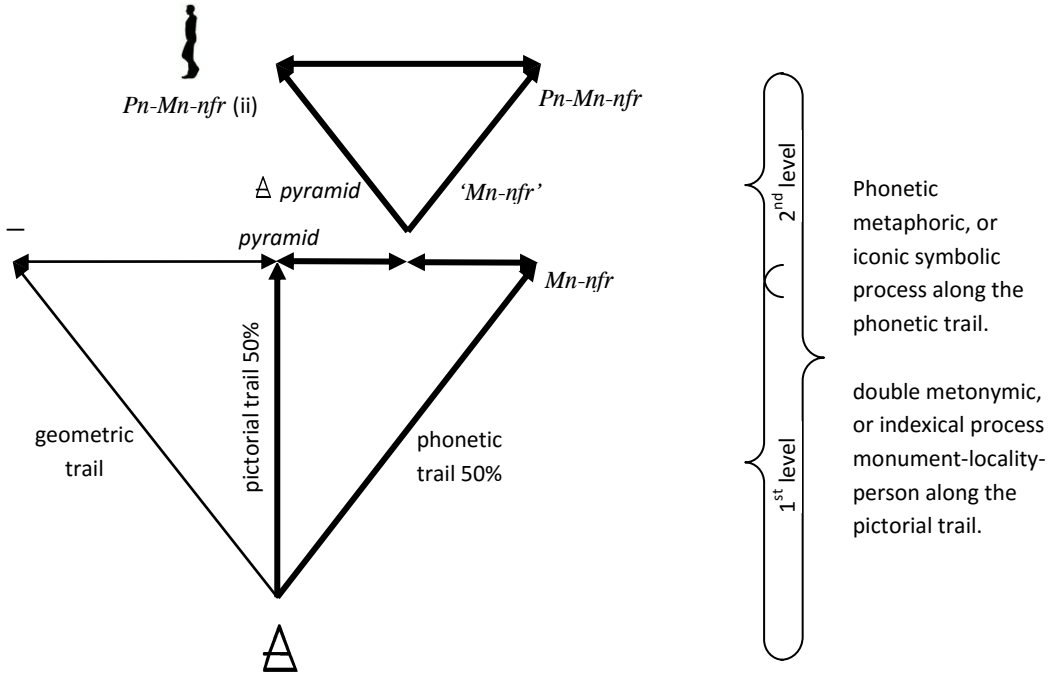


Fig. II2-52 𓉐 referring to *Pn-Mn-nfr* (i) as a symbolic index: along the pictorial trail it indexically connects *Pn-Mn-nfr* (i) with Memphis as 'the one from Memphis', and along the phonetic trail it supports this connection with the sound pattern *Mn-nfr*.

Fig. II2-52 shows the mark 𓉐 that was used by *Pn-Mn-nfr* (ii). This is clear from a match of the marks on ostracon Ashmolean HO 1095 with the hieratic ostracon BTdK 620: the positions of 𓉐 and *Pn-Mn-nfr* (ii) coincide. Moreover, Dorn remarks that on BTdK 620 the remains of paint after the sign 𓏏 in the name *Pn-Mn-nfr* may be interpreted as the pyramid (Gardiner O24).[289] The mark also occurs as 𓏏𓉐, combining the pyramid and a *nfr*-sign. There is clearly a relation between the mark and *Pn-Mn-nfr* (ii), but how can we visualize the semiosis?

Along the pictorial trail 𓉐 represents a pyramid. The form of the mark also occurs in hieroglyphic script, although it does not have a phonetic value; it rather functions as pictorial determinative in the word *Mn-nfr*, 'Memphis'.[290] As a pyramid, the mark may be representative for the capital in a metonymic, or indexical 'monument for locality, or capital' relation. In the first level of

[289] Dorn, *Arbeiterhütten im Tal der Könige*. Text- und Katalogband, 396 note e.
[290] WB II, 63.6.

semiosis we thus have an interpretant which is evoked along the phonetic trail, that is '*Mn-nfr'*, and an interpretant which is evoked along the pictorial trail, that is *pyramid*; the latter is indexically connected to the phonetic interpretant. The representamen in the second level of semiosis then departs from a combined pictorial and phonetic interpretant. This new representamen, '*Mn-nfr'*, refers to *Pn-Mn-nfr* (ii) in the context of the administration of Deir el-Medina in two manners: 1) on the basis of similarity in sound pattern the interpretant *Pn-Mn-nfr*, 'the one from Memphis' is evoked; 2) on the basis of a double metonymic relation 'monument for locality for person' *Pn-Mn-nfr* (ii) is referred to as the ultimate object. We do not know the exact nature of the connection between *Pn-Mn-nfr* (ii) and Memphis; for instance, we do not know whether he in fact came from Memphis to work in Deir el-Medina. But it may be argued that he or his family at least had ties of some nature to the capital for him to be called 'the one from Memphis'. Ultimately, therefore, the mark can be said to be a symbolic index in that it indexically connects *Pn-Mn-nfr* (i) to Memphis, and makes use of phonetic metaphor to support this connection.

In all three examples we find Goldwasser's phonetic metaphor; that is, in all three examples the semiosis is at least partly based on similarity in sound pattern between the value of the mark being equivalent to a hieroglyphic sign and the name of the workman who used the mark. That means that, even though the marks rely heavily on conventional linguistic values, they do not once behave as purely conventional symbols: their meaning is not literal. Similar phonetic metaphors are found in the semiosis of the marks for ***Kꜣsꜣ*** (v/vi) and his son *Pn-ʿnḫ.t* (iii); for ***Ms*** (iv); for ***Ḥr*** (ii); for ***Mr***.*y-Rʿ* (v) and his son *Nfr-ḥtp* (xii); for *Wsḫ-**nmt.t*** (i); for *Jmn-**nḫt*** (ix); for ***Mꜣꜥ***-*ny-nḫt.w=f* (iii); for *Pꜣ-**šd**.w* (xvi);[291] for *Pꜣ-**ḥm-nṯr*** (ii); for ***Ḳs*** (i); for ***Jmn***-*pꜣ-ḥpy* (iii).

In the following examples, semiosis also takes place at least along the phonetic trail, but instead of phonetic metaphor we see phonetic metonymy. That is, there is no similarity in sound pattern between the representamen and interpretant in the phonetic trail on the one hand, and the ultimate referent on the other. Rather, the phonetic trail evokes an interpretant in the second level that is directly connected to the ultimate referent on the basis of a relation of metonymy. Consider fig. II2-53 below. It shows that the semiosis of the mark takes place along both the pictorial and phonetic trails. Along the phonetic trail, it evokes the interpretant of its hieroglyphic counterpart , that is *sš*. As a new representamen '*sš*', this sound pattern may, in the context of Deir el-Medina, have evoked the function of *sš n pꜣ ḫr*. Thus, along the phonetic trail, the mark does not refer directly to the name of an individual person, but to a function that is carried out by an individual, for instance *Jmn-nḫt* (v) whom we encountered in the previous sections as scribe in first years of Ramesses V. A two-level phonetic symbolic process takes place in which evokes the function *sš n pꜣ ḫr* as interpretant, but it takes a metonymic process of 'function for person' to connect this interpretant to the ultimate referent.

In addition, there is another metonymic process of semiosis that takes place along the pictorial trail. The interpretation of as ultimately referring to someone who carried out the function of scribe is confirmed in that the mark represents a *scribe's outfit*. It therefore has a metonymic relation of 'tool

[291] *Pꜣ-šdw* is a very common name. Dorn lists three plausible identifications for the match between the mark on O.Ashmolean HO 1095 and *Pꜣ-šdw* on O.BTdK 622, of which *Pꜣ-šdw* (xvi) might be the most probable one. Dorn, *Arbeiterhütten im Tal der Könige*. Text- und Katalogband, 396.

for user' to the ultimate referent. In the end, the mark is an index that via symbolic and indexical processes along both the pictorial and phonetic trails is connected to the referent. Similar processes take place in other marks that refer to person via function, such as 𓆑 for the scorpion-controller *Jmn-ms* and 𓉔 for a person who remains unnamed, but exercised the function of doorkeeper according to a match of the marks ostracon Cairo 25317 with the hieratic ostracon Berlin P. 14264. The following two marks in figs. II2-54 and 55 are slightly more elaborate examples of marks that relate to function.

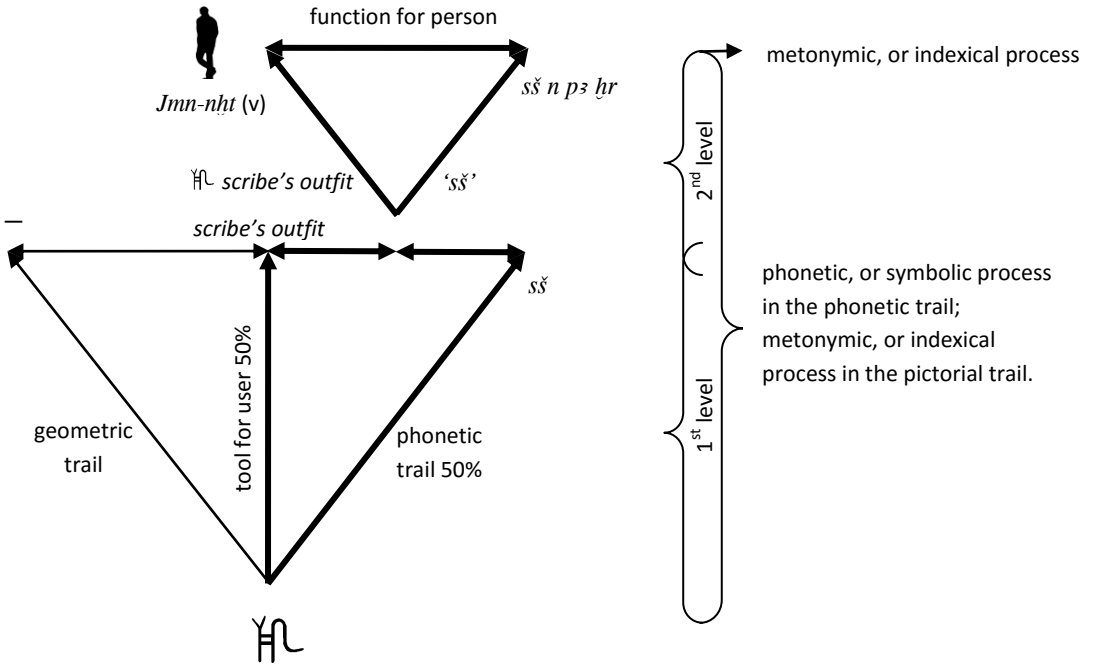


Fig. II2-53 𓏛 referring to *Jmn-nḫt* (v) as a symbolic index: via indexical and symbolic processes along the pictorial and phonetic trails it evokes the profession of scribe, which ultimately refers to *Jmn-nḫt* (v) as exercising this profession.

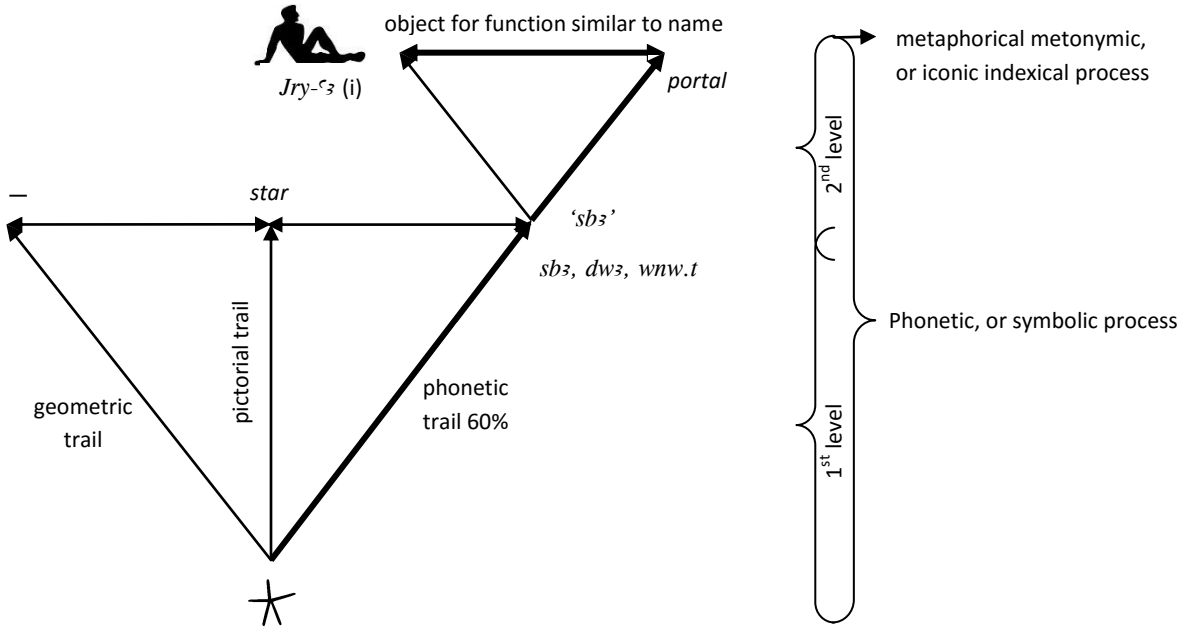


Fig. II2-54 𓀀 referring to *Jry-ꜥꜣ* (i) as a symbolic index: via indexical and symbolic processes along the pictorial and phonetic trails it evokes the function of doorkeeper, which ultimately refers to *Jry-ꜥꜣ* (i) as having exercised this function.

Phonetic metonymy, or the symbolic indexical mode, is found in the mark 𓌙 (fig. II2-54), although its semiosis is uncertain. The mark occurs in all periods, but we only know the identity of its user around the beginning of the reign of Ramesses IV: *Jry-ꜥ3* (i).[292] Along the pictorial trail, 𓌙 may represent a star; as such it has been interpreted by Gardiner.[293] Along the phonetic trail, as equivalent of the hieroglyph 𓇼, the mark can convey the sound patterns *sbꜣ*, *dwꜣ* or *wnw.t*. It is suggested that the semiosis takes place along this trail, specifically through the sound pattern *sbꜣ*. This phonetic interpretant becomes the representamen '*sbꜣ*' in the second level, which may evoke in the mind the interpretant *portal*, because the hieroglyph 𓇼 was used for its phonetic value in the writing of the ancient Egyptian word *sbꜣ*, 'portal': 𓉔𓇼𓃀𓊪.[294] A phonetic symbolic process thus takes place in which 𓌙 leads to '*sbꜣ*' and subsequently to the interpretant *portal*. In turn, this *portal* may be directly connected to *Jry-ꜥ3* (i) on the basis of an iconic indexical relation. The Egyptian phrase *jry-ꜥ3* is a title and means 'doorkeeper'. Therefore, the interpretant *portal* may connect the mark 𓌙 and *Jry-ꜥ3* (i) on the basis of an 'object for title' relation, the designation of the title being similar to the name by which the workman was known. Ultimately, the mark 𓌙 is, then, an iconic index for *Jry-ꜥ3* (i), based on a phonetic symbolic process.

Since this path of semiosis is only a suggestion, we chose to weigh the phonetic trail with 60%. As mentioned, 𓌙 also occurs in dynasties 18 and 19. Although we do not know who used the mark in those periods, it is clear that another person named *Jry-ꜥ3* has not been identified. The semiosis of 𓌙 in dynasties 18 and 19 thus seems to have followed a different path that remains unknown to us at present.

In fig. II2-55 we see the mark that was used by *Nḫ.w-m-Mw.t* (vi) from the moment he became foreman of the right side of the crew in the first year of Ramesses IV.[295] The semiosis could be suggested to take place along both the pictorial and phonetic trails as a symbolic index. Along the pictorial trail, the mark represents a *bee*. Along the phonetic trail, it can be considered equivalent to the hieroglyphic sign 𓆇, which is used in the ancient Egyptian word *bj.t* 'bee', but also in *bj.tj* 'king (of Lower Egypt)'. Considering the many uses of honey in ancient Egypt and the domestication of bees since dynasty 5 we may argue that the ancient Egyptians were familiar with the fact that bees naturally live in colonies and that worker bees are headed by one large specimen.[296] Perhaps the nisbah *bj.tj* meaning 'king', or literally 'he of the bees', semantically relates to this 'head of the hive'. As such, the pictorial and phonetic interpretants of the mark 𓆑 may have worked together to become a new representamen, in which 𓆑 as *king of the worker bees*, or *king of the hive*, metonymically refers to *Nḫ.w-m-Mw.t* (vi) in his position of foreman of his workers. Ultimately, then, the mark is indexical in connecting *Nḫ.w-m-Mw.t* (vi) to his position via a phonetic symbolic process.[297]

[292] E.g. O.BM EA 41649, O.IFAO ONL 6283, O.IFAO ONL 6730. *Jry-ꜥ3* (i) does not occur in Davies, *Who's Who in Deir el-Medina* (1999), but Collier tentatively identified him as the son of Khaemnun (iii). Collier, 'The Right Side of the Gang' in Haring, Kaper & van Walsem (eds.), *The Workman's Progress* (2014), 14-15.
[293] Gardiner N14. Another interpretation was suggested by Beaux, who compares the hieroglyph to a starfish. Beaux, 'Étoile et étoile du mer', *Revue d'Égyptologie* 39 (1988), 197-204.
[294] WB IV, 83.
[295] Collier, 'The Right Side of the Gang' in Haring, Kaper & van Walsem (eds.), *The Workman's Progress*, 6.
[296] That this chief animal was actually a female with the sole function to serve as reproducer was possibly not yet known. Feierabend, 'Die ägyptische Biene' in Vaelske et al. (eds.), *Ägypten. Ein Tempel der Tiere*, 90-91.
[297] Note that, if this reasoning is correct, the semiosis to refer to a foreman changed in the course of dynasties 19-20. Compare what has been said about the mark 𓅱 above (p. 173).

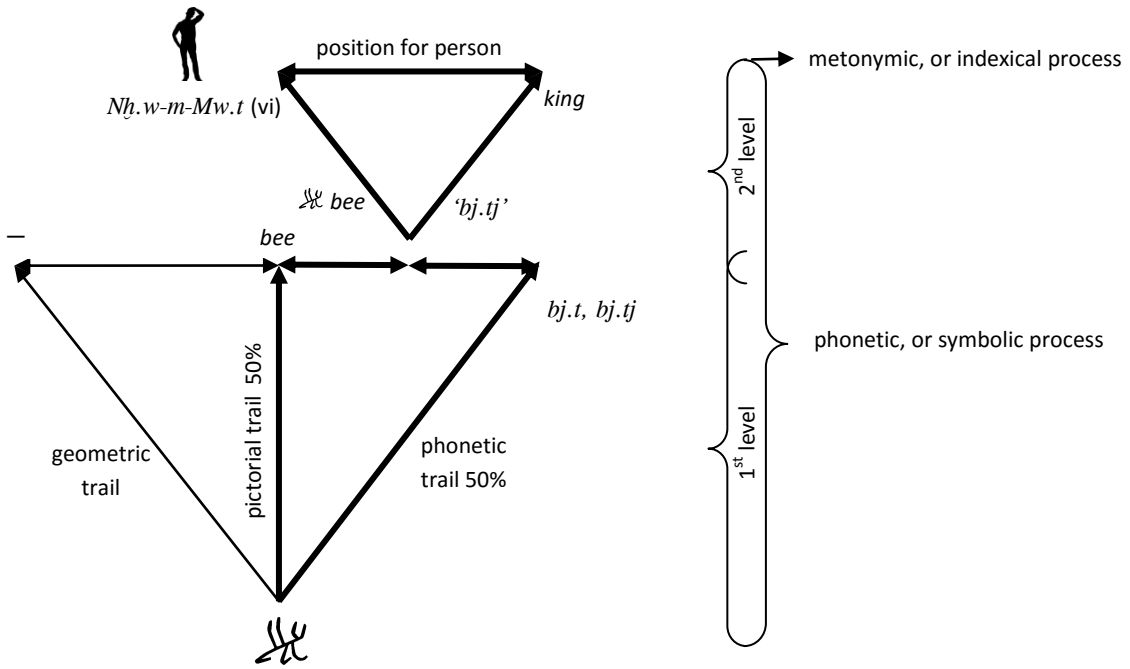


Fig. II2-55 referring to *Nḫ.w-m-Mw.t* (vi) as a symbolic index: via indexical and symbolic processes along the pictorial and phonetic trails it evokes idea of the bee as king of the worker bees, or king of the hive, as metonymy for *Nḫ.w-m-Mw.t* (vi) as foreman.

Before *Nḫ.w-m-Mw.t* (vi) became foreman, he used the mark (fig. II2-56). The semiosis of this mark is not entirely clear. We are not certain of what the mark represents. In interpreting the mark as abstract geometric, one is inclined to think that the semiosis took place simply on the basis of agreement; that the notion evoked by the mark was simply the plain form *d4h1* (diagonal 4, horizontal 1), and that this form was used by *Nḫ.w-m-Mw.t*. The mark would then be a purely conventional symbol to which *Nḫ.w-m-Mw.t* was directly and conventionally nailed as its meaning. Such an abstract geometric mark is potentially an *indexical* symbol when it was passed on to its user on the basis of a metonymic 'father-son' relation, as was the case with *Jn(j)-ḥr-ḥʿw* (ii) and *Ḳnnɜ* (i), but we do not know whether that was the case with *Nḫ.w-m-Mw.t*. However, from a comparison of the sequence of the marks on ostracon BM 50716 with marks' ostraca from the same period it appears that the mark could have been equal to the mark .[298] This mark, as was mentioned above on p. 173, could have been connected to the office of foreman in dynasty 19 by representing a level. If that connection is correct, it remains the question why *Nḫ.w-m-Mw.t* used it precisely *before* he became foreman, and why he changed his mark, therewith the semiosis between the mark and the office of foreman, after his promotion. Presumably, the connection between and the office of foreman was, in dynasty 20, no longer known or used, which may also explain the more frequent form of which we do not know whether it was also conceived of as level. While an explanation for the use of when indeed it was equal to by *Nḫ.w-m-Mw.t* may have been his relation to *Sn-nḏm* (i), being the latter's great-great-grandson, in whose family the mark appeared in several variations,[299] such a relation does not exist between the mark and its subsequent user after *Nḫ.w-m-Mw.t*: the mark was passed on to the workman *Pɜ-md.w-nḫt* (i), who had no family ties to *Nḫ.w-m-Mw.t*. The only

[298] On O.BM 50716 the form takes the position of .
[299] This is further explained and illustrated in Part III, chapter 1, section 3 about mark derivation in Deir el-Medina, p. 270. For the family relation, see Davies, *Who's Who at Deir el-Medina*, chart 7.

reason that 𓀀 now referred to *P3-md.w-nḫt* (i) could be suggested to have been that the mark had become available and *P3-md.w-nḫt*, as newcomer to the crew, needed one. This suggests, first, that a connection between 𓀀 = 𓀁 and the office of foreman was indeed lost and, second, that the semiosis may have been purely conventional: the agreement that *d4h1* was used by *P3-md.w-nḫt* (i), without there being any further reason for that. However, we cannot be certain of this and we must not resort to a reasoning in which we assume purely conventional semiosis on the basis of a lack of knowledge and understanding.

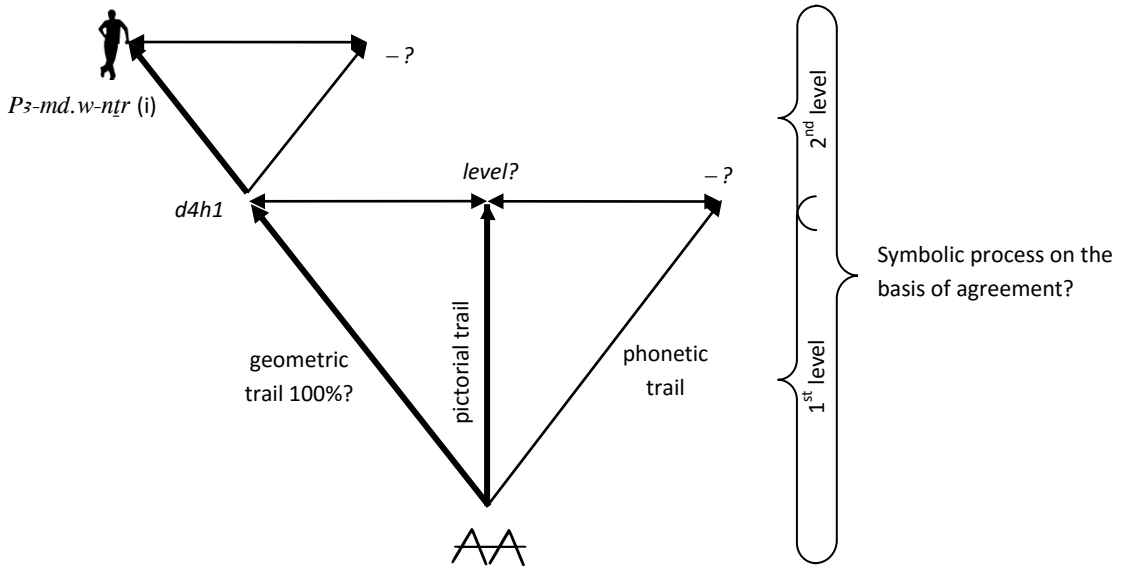


Fig. II2-56 The semiosis of the mark 𓀀 referring to *P3-md.w-nḫt* (i): symbolic process on the basis of agreement?

It may be argued that the number of marks that convey meaning on the basis of pure convention was limited in the elaborate marking system we see in dynasty 20. Especially in an open system to which new marks can be added when necessary, a high number of marks the semiosis of which must be *learned* instead of *inferred* renders the system inefficient: more signs to be learned means more cognitive effort. For the same reason it is also to be expected that the passing on of a mark between two unrelated men as in the case of *Nḫ.w-m-Mw.t* (vi) and *P3-md.w-nḫt* (i) was an exception rather than a rule: when refuge is taken to pictorial and/or phonetic, metaphoric and/or metonymic relations between mark and user in order to reduce the cognitive effort, one expects the mark to remain within the family and to be passed on from father to son with the aim to preserve this pictorial and/or phonetic, metaphoric and/or metonymic connection. The situation may have been different in dynasty 18, when the number of identity marks in general was still fairly small. Even in the case that half of the approximately 40-45 18th dynasty marks was based on pure convention the number would still be less than the 26 letters of our modern Western alphabet; thus, easy to learn and remember.

For dynasty 18 we deal with a lot of cases in which the semiosis, including the ultimate referents, of the marks remains unclear. Many marks appear to be of abstract geometric form and they are therefore especially liable to be interpreted as conventional symbols of geometric nature. But also pictorial or even apparently script-related marks may be based on purely conventional agreement in that there simply was no further semiosis between the mark and its user. We have very few matches between marks and workmen, of which even less are certain. The most certain matches are presented in figs. II2-57 and 58.

Fig. II2-57 shows the mark 𓉐, which was possibly used by *Ḥḳꜣ-nfr*. The mark is encountered in his tomb (N 1350) in the Western Cemetery, on an amphora that also bears the inscription 'Osiris Heqanefer, true of voice'.[300] The form appears to be geometric, but might be a linear representation of an object, or even a being when the four vertical lines are interpreted as legs or paws. We have, however, no suggestions at present and are inclined to consider that the semiosis took place along the geometric trail in which the mark 𓉐, with the geometric notion *v2h1v4*, was simply nailed to *Ḥḳꜣ-nfr* on the basis of agreement. Similar geometric symbolic processes of semiosis might be considered for the marks 𓊃, 𓉔, 𓏏, 𓉗 and 𓎛.

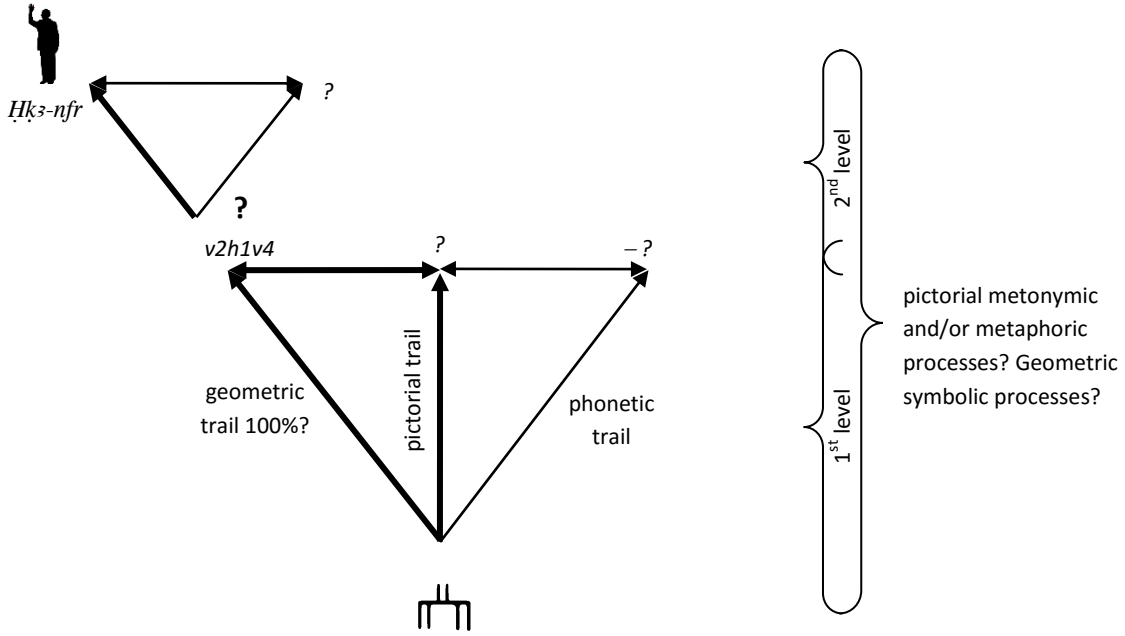


Fig. II2-57 The semiosis of the mark 𓉐 referring to *Ḥḳꜣ-nfr* remains unknown, but presumably follows the pictorial and/or geometric trail.

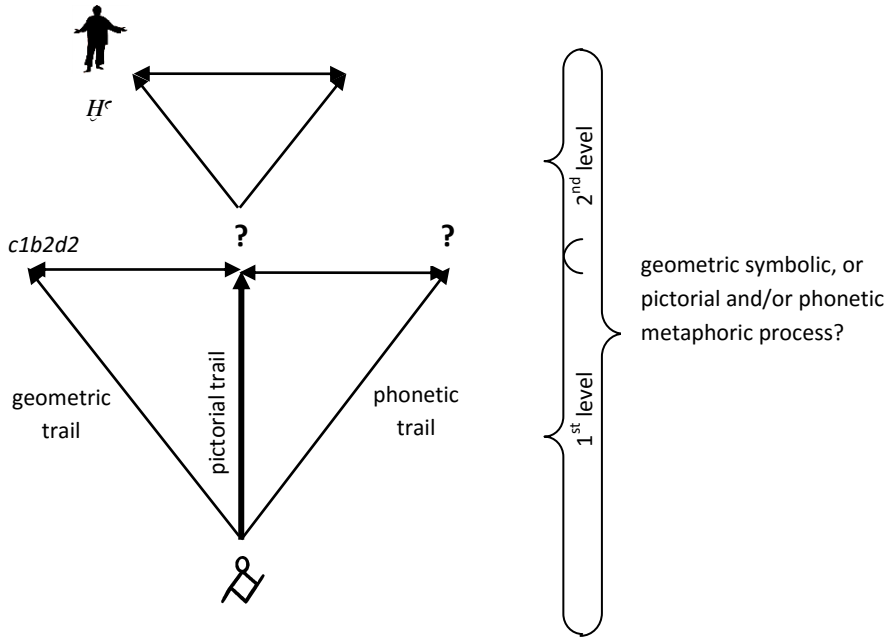


Fig. II2-58 The semiosis of the mark 𓀀 referring to *Ḥˁ* remains unknown.

[300] Bruyère Rap. 33-34 I 112, fig. 48.

Fig. II2-58 shows the mark which belonged to the foreman *Ḥ*ʿ. The mark is frequently encountered in his tomb in the Western Cemetery (TT8), primarily on pottery and linen, but also on a bronze amphora support and a bronze container. Allomorphs of the mark are and . It has been suggested that the forms represent sandals, conform the sometimes crude representation of hieroglyphic signs as identity marks in dynasty 18. However, the sandal occurs as a mark in dynasty 18 in much more recognizable form as , and not once in the tomb of *Ḥ*ʿ. Moreover, both the sandal and the mark of *Ḥ*ʿ occur on the same ostracon IFAO ONL 6298, which suggests that they belonged to two different men. One might also think of an earthenware pot with handles, but pots as well occur in more recognizable forms in dynasty 18: , , . Moreover, the necks and rims of these pots are usually displayed as triangular and rectangular in form, not as a circle as consistently in , or . Although the mark does come across as the representation of a concrete object or being rather than as a plain abstract geometric form, also because the exact same form appears as a builders' mark on the pyramid of Amenemhet II at Dashur,[301] we have thus far no suggestions. Signification might be expected along the pictorial trail, but this and the precise nature of the signification remain unclear.

There are marks from dynasty 18 that most plausibly generate meaning along the phonetic trail, but they are often mono-consonantal signs, which have disappeared in dynasty 20. They give only one isolated sound or letter. Consider the marks and in figs. II2-59 and 60 below. The identities of the workmen who used these marks, or of workmen who used other 18th dynasty marks that appear to be mono-consonantal hieroglyphic signs such as , , , , , and , remain unknown at present. Nevertheless, we can speculate on the process of semiosis: the sound values *m* and *j* may be considered as abbreviations of names. Multi-consontantal abbreviations are frequent in later periods as we have seen above, but mono-consonantal abbreviations seem to be rare. Yet, they are attested already in the first half of the second millennium BC in the geographic section of the Ramesseum Onomasticon, which contains a list of 29 town names, each followed by a sign that abbreviates the town name.[302] For instance, the town numbered 197 by Gardiner in his publication of the Onomasticon is *Ḥfꜣ.t*, which is abbreviated with the mono-consonantal sign *ḥ*; the town numbered 206 is *Jwn.t*, which is abbreviated with the mono-consonantal sign *n*; and the town numbered 190 is *Ḏbꜣ*, which is abbreviated with the mono-consonantal sign *d* or *ḏ*. Conform this practice, we may conceive of the mark as an abbreviation that leaves only the preposition *m* in names such as *Jmn-m-jp.t*; and we may conceive of the mark as an abbreviation that gives only the initial mono-consonantal sound of a name such as *Jmn* or *Jpwy*.[303] Perhaps this idea finds support in the fact that the mark is encountered on ostraca Ashmolean HO 0892 and KV 10004 together with a mark , which may also be seen as an equivalent of the hieroglyph *j*. Although the former ostracon also shows a double occurrence of the mark , which may be reason to interpret both and as a double occurrence of the same mark as

[301] See Part I, chapter 1, p. 31: The possibility that the forms were linear abstractions of a concrete object or being is considered more likely than that they were purely abstract geometric inventions which occurred in exactly in the same form at two sites that were geographically and temporally far removed.

[302] Gardiner, *Ancient Egyptian Onomastica*, 11-13, plate IIA. See also Part I, chapter 2, pp. 80-81. Gardiner in fact remarked that the signs following the town names could be compared to 'certain Theban ostraca which display similar cryptic symbols'. Most signs in the Onomasticon are abbreviations, but we also find metonymy, for instance in when the provincial sign is used to represent the provincial capital *Gbtw*, Coptos, in town number 205.

[303] Compare also the possibilities for abbreviating personal names given in the chapter 'Kurz- und Kosenamen' in Ranke, *Die ägyptischen Personennamen* II, 95-171.

well, KV 10004 contains no double marks. Did the marks and belong to two different workmen, whose names both began with the mono-consontantal sign *j*; and did they vary their mark in order to make the difference between their identities clear?

If indeed the marks in and referred to workmen's names along the phonetic trail, they are phonetic metaphors in that there is similarity in sound pattern. Alternatively, the pictorial trail may be considered: perhaps generated meaning on the basis of an animalistic metaphor, or perhaps was used according to a relation with its user on the basis of a metaphor or metonymy that we do not recognize; or, perhaps, there is no further meaning behind the marks and they were merely used on the basis of plain agreement. At present none of the trails leads to decisive answers as to the identity of the workmen identified through the marks.

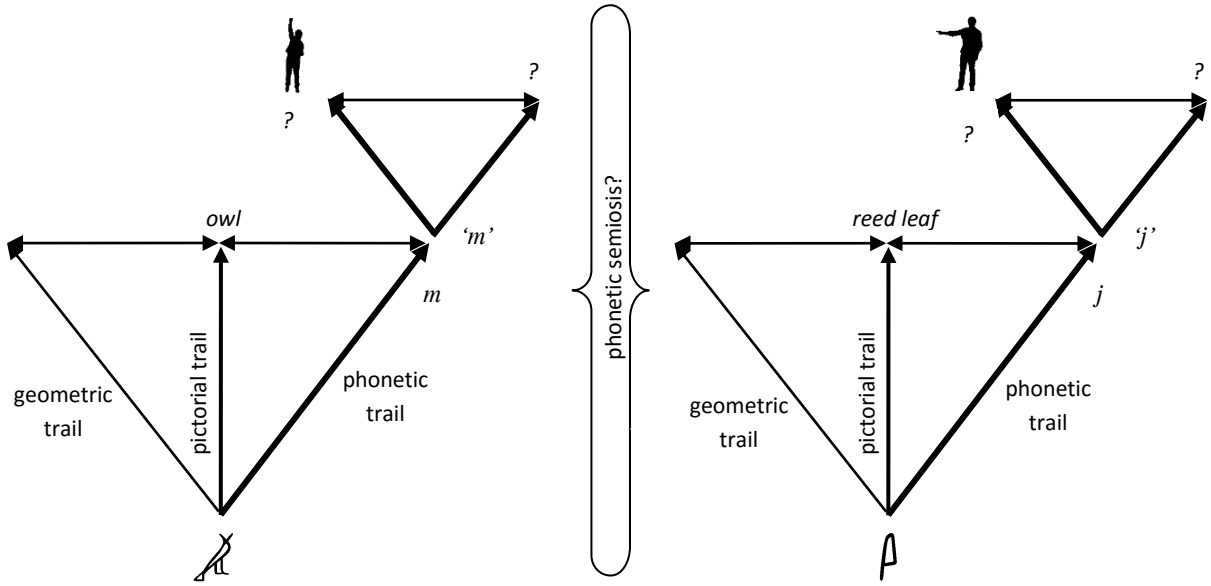


Fig. II2-59 The semiosis of the mark as suggested to take place along the phonetic trail on the basis of a phonetic metaphoric process in which the abbreviation *m* is similar to part of the workman's name.

Fig. II2-60 The semiosis of the mark as suggested to take place along the phonetic trail on the basis of a phonetic metaphoric process in which the abbreviation *j* is similar to part of the workman's name.

As a final example, we find in dynasty 18 marks that are clearly pictures of concrete objects or beings. Fig. II2-62 presents the mark . It was found three times in Tomb N 335, puits 1099 in the Western Cemetery: the tomb of *Nḫ.w-nfr*.[304] This is our only argument to link the mark to *Nḫ.w-nfr* as its user; the identification is thus very uncertain. As regards the semiosis, the first interpretation of the mark is a pictorial one: it represents a mirror. The pictorial trail offers pictorial metonymic or pictorial metaphoric processes of semiosis. Perhaps *Nḫ.w-nfr* was known to care about his appearance, in which case the mirror would be a metonymic index referring to him ('object for user')? Or perhaps the qualities of brightness, reflection and perfect eternal appearance that were associated with the mirror in ancient Egypt were projected onto *Nḫ.w-nfr*, in which case the mirror was a metaphor for him? Or perhaps *Nḫ.w-nfr* had a special relation to the sun-god Re, who was associated with the mirror on the

[304] Bruyère Rap. 27 II, 012, fig. 9 nr. 1; Bruyère Rap. 27 II, 115, fig. 77 nr. 02; Nagel, Céramique, 054, fig. 34 nr. 06c.

basis of the mentioned qualities? In that case the mirror would be a metaphor for Re and subsequently an index for *Nḫ.w-nfr* ('personal god for person'). Or did a similar indexical relation link the mirror to *Nḫ.w-nfr* via the goddess Hathor, who was also frequently associated with the mirror?[305]

Along the phonetic trail we could suggest Egyptian terms for 'mirror', such as *ꜥnḫ* or *mɜ.w-ḥr*, but also descriptions such as *mnḫ.y*, 'the excellent one', or *jmn.t.y*, 'the western one' or 'divine one'.[306] Even if there is no similarity in sound pattern with the name of *Nḫ.w-nfr*, or with the name of one of his forefathers who potentially used the mark before him, at least the last two options may be considered metaphoric on the basis of a projection of the qualities *excellent*, *western* or *divine* onto the mark user.[307]

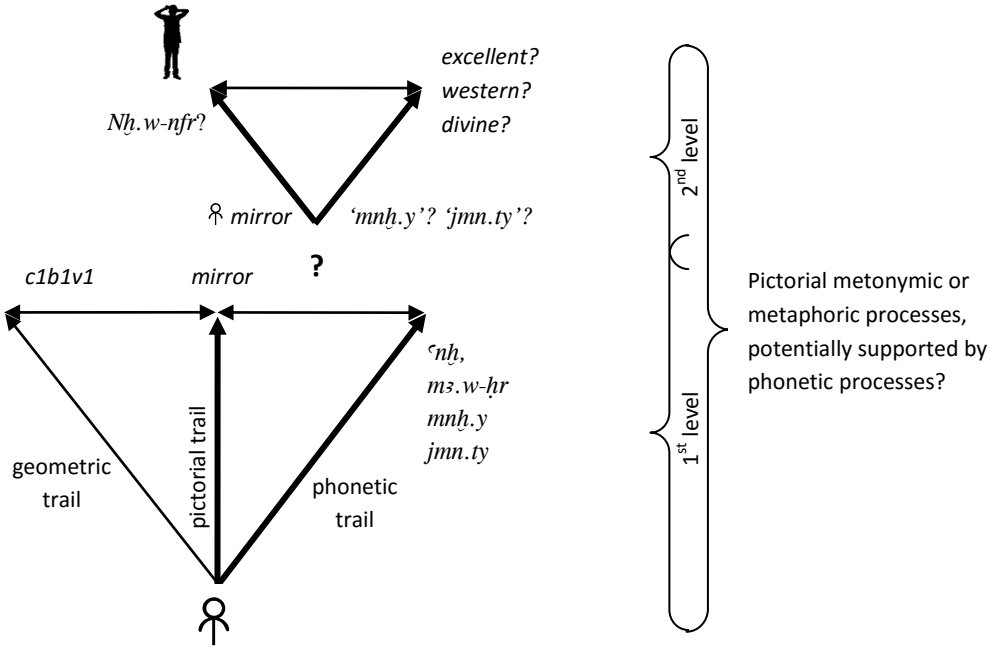


Fig. II2-61 the semiosis of the mark 𓁟 referring to *Nḫ.w-nfr* is suggested to take place along the pictorial or the phonetic trail on the basis of metonymic or metaphoric processes.

Similar pictorial metonymic or metaphoric processes, potentially supported by phonetic processes, in which the user of the mark may be connected to the object or being represented by the mark, or may be compared to its qualities, might be expected for other 18th dynasty pictorial marks such as 𓉔, 𓉐, (soul-house, T-shaped basin, garden pool); 𓋴 (stool?); 𓎛 (sunshade?); or 𓇋 (papyrus plant?).[308] However, especially in cases where the ultimate referent remains unknown, it is easy to get lost in speculation, and with respect to a limited number of marks we must reckon with the possibility that even such pictorial marks may be conventional symbols in that there is no further meaning or semiosis behind their use other than the agreement that 'mark X was used by workman Y'.

[305] O'Neill, *An Overview on Egyptian Mirrors from Prehistory to the New Kingdom*: https://www.academia.edu/1439781/Reflections_of_Eternity; http://www.britishmuseum.org/explore/highlights/highlight_objects/aes/b/bronze_mirror_with_two_falcons.aspx

[306] WB I, 204.11-13; WB II, 10.15; Meeks, AL 79.1235; Meeks, AL 79.0232; O'Neill, *An Overview on Egyptian Mirrors from Prehistory to the New Kingdom* : https://www.academia.edu/1439781/Reflections_of_Eternity.

[307] O'Neill, *ibid*.: 'Other mirrors from Bersheh are named 'the excellent one' and 'the divine one'. Whether this relates to the mirrors or is in reference to the owners is unclear!'

[308] For these pictorial interpretants, see II 001, II 016, II 028, II 029 and II 039 in Table I3-1.

b. Discussion and conclusive remarks

The identity marks from Deir el-Medina convey meaning in at least two or more levels of semiosis that include representamen (form), interpretant (notion) and referent (existent individual workman). Different degrees of symbolic, iconic and indexical motivation are accommodated along one or more of the three trails as well as in processes of metaphor and/or metonymy throughout the two or more levels of semiosis. The ultimate semiosis of a mark is the sum of its degree of symbolic, iconic and/or indexical motivation and the processes of metaphor and/or metonymy it makes use of. When thus analyzed, we see that marks from dynasties 19 and 20 are complex constructs of metaphor and metonymy especially along the pictorial and phonetic trails as phonetic metaphors or phonetic metonymies, or as pictorial metaphors or metonymies backed up or complemented by phonetic symbolic processes. They integrate various processes and trails and simultaneously make use of the iconic, indexical and symbolic domains. They are puzzles that attest semantic creativity, and as such do not merely refer to the identity of the workmen, but also oftentimes reveal details about them such as origin, lineage, function or position.

For dynasty 18 we have much less data, and any substantial comparison between the semiosis of the 18th dynasty marks and marks from the later periods is hindered by a lack of knowledge. We can only attest that there are clearly less script-related marks, and those that are of a form that also occurs in script are not as consistent in form and orientation as one would expect from a sign with linguistic value. Perhaps this suggests that the phonetic trail was not yet used to the extent we see in the later marks? This idea would find support in the overall lack of written material in the early period: it may have been the case that the early members of the community were less literate and less familiar with linguistic script than the members from the end of the 19th dynasty onwards. For the marks from dynasty 18 we have not attested the complex, simultaneous and integrated use of the trails and different pictorial and/or phonetic metaphoric and/or metonymic processes of semiosis, but this may simply be due to a lack of sources and consequently our lack of knowledge. Purely on the basis of speculation we could suggest that the marks from this period did not yet have to be the complex constructs we see in later times, because the community, and therewith the number of marks in the system, were still rather limited. Perhaps there was no need yet to create multiple simultaneous connections between man and mark to serve as *aides-mémoires* in identification.

If so, then we might perceive a development in which the marks from dynasty 18 show processes of semiosis that are less the complex integrations of multiple semiotic processes we see taking place in later marks. If we recall the suggestion put forward in chapter I of Part I, where we concluded on a shift of the marking system in the Venn-diagram of visual communication from a pictorial and geometric nature toward more emphasis on the system of writing, we can now argue that indeed there was a growing emphasis on marks related to script, which presumably resulted in an increased use of the phonetic trail and phonetic processes of semiosis, but this shift did not take place at the expense of the other domains and other modes of semiosis. Thus, fig. II2-62 presents a hypothetical situation in which the marking system draws from all domains and makes use of all modes of semiosis in both periods with the difference being that in dynasty 20 we find one integrated cloud that especially focuses on the transitional domains and the centre where all domains come together.

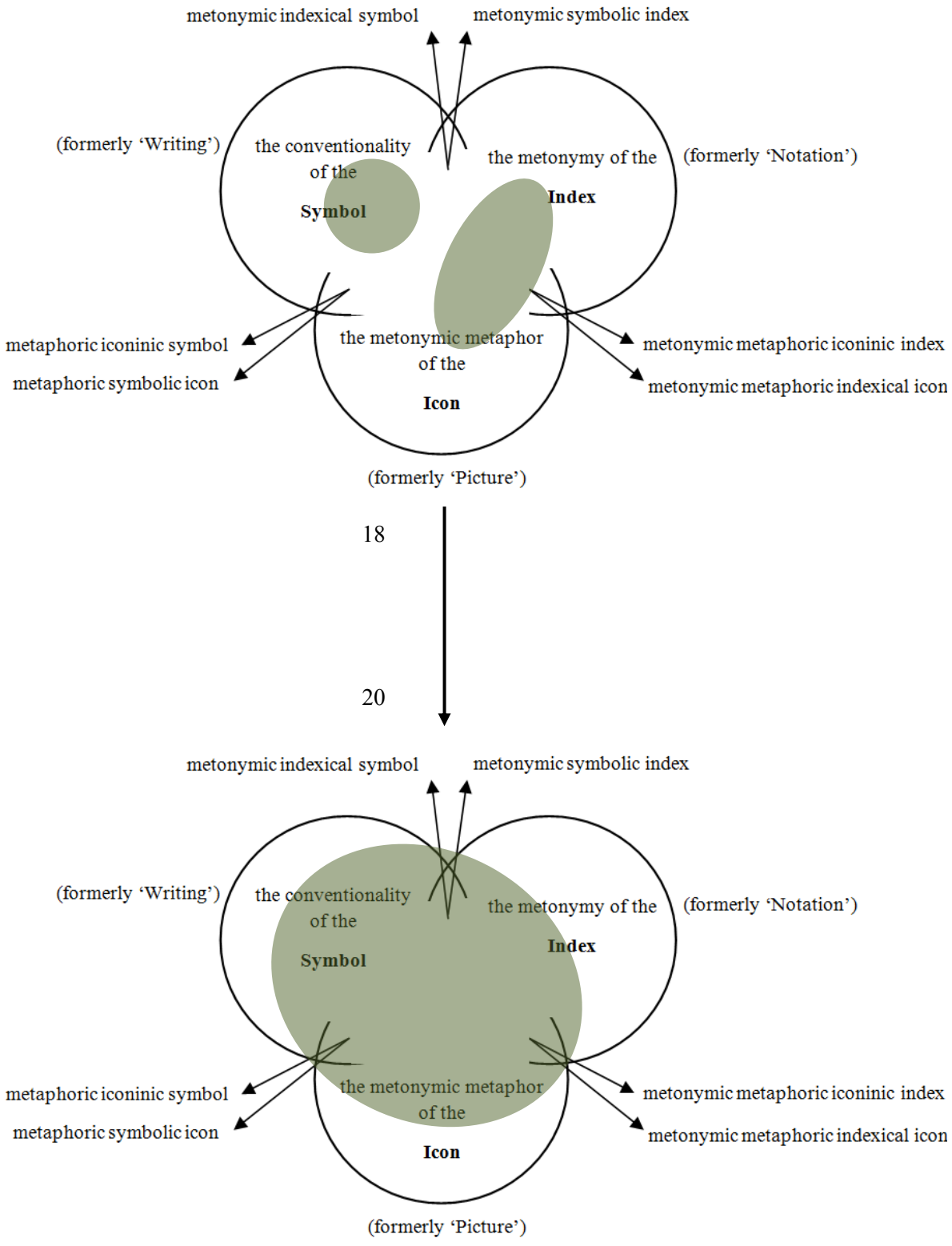


Fig. II2-62 The semiosis of the marks incorporated in the Venn-diagram of sign functions, displaying a development from single processes of semiosis to integrated complex constructs making use of multiple processes of semiosis.

Instead of a shift from one or two domains to another, the identity marks from Deir el-Medina in their development rather show an overall enrichment in all domains and modes of semiosis.

This is, at least, the result of an analysis of the marks in the combined dyadic and triadic semiotic model as it has been suggested here. It is nothing but a theoretical suggestion for the accommodation of the marks and their modes of semiosis, and it is certainly not a perfect suggestion. There remains a considerable subjective aspect in the interpretation of meaning along the trails and in the processes that take place. We must also especially be aware of a modern Western bias when we search for the interpretants which a form being a representamen may evoke. Suggestions for interpretants, and for the trails and processes that are followed, must always find support in contextual linguistic and archaeological research. Thus, archaeological study may support interpretations given to pictorial and abstract geometric marks; and linguistic research is helpful in the identification of forms of metaphor and metonymy. Metaphor and metonymy are rhetoric tropes that are highly culture- and tradition bound; therefore, we must be certain that the suggested metaphoric or metonymic relations in fact existed in ancient Egypt. We must also be aware of the possibility that the Egyptians made use of forms of metaphor and metonymy with which we are not familiar. Several studies now focus on metaphor and metonymy in ancient Egyptian language and script, and such linguistic investigation is helpful to the analysis of the manners in which the marks conveyed meaning.[309]

While there thus remains much work to be done, the value of the model lies in the fact that it allows a visual mapping of the possible values and meanings of the marks, and in that it allows to indicate and weigh the probability of certain trails and processes that may play a part in the ultimate semiosis of the identity marks. As such, the chapter has been offered as an answer to the question 'How do the marks convey meaning?'.

[309] Goldwasser, *From Icon to Metaphor*; Goldwasser, *Prophets, Lovers and Giraffes*; Kammerzell & Lincke, 'Egyptian Classifiers at the Interface of Lexical Semantics and Pragmatics' in Grossman, Polis & Winand (eds.), *Lexical Semantics in Ancient Egyptian*, 55-112; Lincke & Kutscher, 'Motivated sign formation in Hieroglyphic Egyptian and German Sign Language' in *ibid*., 113-140; Lincke, *Die Prinzipien der Klassifizierung im Altägyptischen*.