Generating Polysemy: Metaphor and Metonymy

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In this paper I want to show why metaphor and metonymy are, on the one hand side, two distinct types of generating new meanings for existing expressions, and why, on the other hand, there are many cases which can either been viewed as metaphor or as metonymy, without the one way of understanding excluding the other. After having given a general characterization of metaphoric and metonymic concept formation as part of the general method of concept formation I shall show how two different kinds of perspective change are involved in the metaphoric and in the metonymic process, respectively. Metaphors involve a crossing between perspectives that select similarities (identical features) and differences under each of the perspectives chosen; metonymies involve a crossing between perspectives directed towards contiguous parts of situations and objects.

We will start with concept formation, as it is presented in Bartsch (1998), where metaphors are generated on the experiential level of concept formation, as well as on the theoretical level of linguistically explicated concepts.. On the experiential level, linguistically expressed concepts are equivalence classes in stabilizing series of growing sets of satisfaction situations for the use of these expressions, which are collected under a perspective of attention. The equivalence is determined by the common internal similarity of the sets of situations, under the relevant perspective. On the theoretical level, linguistically expressed concepts are defined by the characteristic semantic distribution of the expression, i.e. the sentential complements of the expression used as a general term in universally quantified sentences. Thus the conjunction of the predications that generally hold with respect to the term make up the features characteristic for the concept in a theory, i.e. in a coherent set of general sentences held true. Concepts on this level are theoretical concepts in a broad sense; they are linguistically explicated concepts, i.e. explicated within this coherent set of general sentences in which they are used as general terms. Not yet stabilized concepts are called “quasi-concepts”; a stabilized concept can again become a quasi-concept when it becomes destabilized by massive data, or data enhanced by special importance and great normative impact enacted in the situations of use of the respective expression.

Concept formation consists in ordering growing sets of data, especially satisfaction situations for expressions, according to similarity and/or contiguity under perspectives into stabilizing sequences which are the (quasi-)concepts that form the basic experiential conceptual structure. These two principles, which figure in normal concept formation, also give rise to metaphoric or metonymic language use, which result in new concepts expressed by old (lexical) expressions. The preference of stability within an evolving conceptual structure induces force towards extending these structures by metaphor and metonymy whenever situations are met which do not fit into the concepts already established saving stability. Including cases of metaphoric and metonymic use of an expression into the already

established concepts expressed by the expression would, in these cases, destabilize the already existing concepts.
Metaphor and metonymy do not just involve a transfer of a conceptual network from a source domain onto a target domain, as claimed by cognitive approaches, but also involve a shift in perspective which makes possible the transfer from the one domain to the other by selecting suitable aspects of the source network, and also the source domain, which can be satisfied on the target domain. Concept broadening and concept narrowing, on the other hand, do not involve a shift of perspective; rather they happen under the same perspective, which might at most be made less or more specific.
A perspective provides a selection of those dimensions or similarity spaces in which the aspects of the concepts that fall under the perspective are determined in contrast to other concepts that fall under the same perspective. A perspective can formally be seen as the set of the possible concepts that fall under it. In concept formation, a perspective precedes the several concepts that fall under it. Primarily perspectives, as horizons of understanding situations, are provided by activities, desires, dispositions, and finally groups of activated neuronal fields, especially sensorial and pre-motor fields. Secondarily new perspectives are constructed on the basis of culturally established practices, tasks, and also processes of theory formation based on previously acquired knowledge and concept formation. There are, for example, basic quality perspectives or dimensions for color, form, and motion concepts, and there are complex conjunctions of perspectives of characterization for events and individuals, for example those perspectives which are opened up by the questions "What kind of party was it?" or "What kind of instrument is this?" or "What kind of animal is this?". Metaphoric language use, like all language use, always happens under perspectives. But in normal language use the perspectives for the use of an expression are the default ones, which have been active in the process of previous concept formation. Thus for the expression *lion* the default-perspective is the one of natural kind, under which lions contrast with other natural kinds, especially other kinds of animals. For the use of this expression with respect to a human a different perspective is required, for example the perspective of behavior in adverse or dangerous situations, by which a typical aspect of lion behavior is selected from such lion situations which is transferred on the human which is characterized on such a type of situation as a lion. It happens on both, on the experiential and on the linguistically explicated theoretical level of concept formation.

The application of the perspective-dependent similarity operation occurs on different levels, on the experiential level in sorting out identity and opposition of phenomenal properties and identity and opposition of relationships in creating qualitative, quantitative, relational and ontological kind categories, and on the theoretical level in sorting out identity and opposition of features and relationships which are expressed linguistically in coherent sets of general sentences held true (theories). The role of similarity is not restricted to the identity of internal properties of objects and situations, rather similarity also is due to identity of external contiguity relationships between objects, between situations, and it is due to relationships of

objects and situations with emotional attitudes, desires, and behavioral dispositions of people. Thus a cold metal bar can be similar to a cold color by partly having an identical relationship to the emotional reactions of humans. Both have a same effect in causing a certain emotional reaction. Also causal relationships expressed in theories, and the roles something plays in rules and norms can create a similarity which we take into account in concept formation. It thus is not a question of similarity or theoretical explication; rather similarity can be due to aspects of appearance, or it can be due to aspects and relationships explicated in theories. (A fairly comprehensive representation of the roles of similarity and theories in concept formation as it is discussed by Cognitive Psychologists can be found in the thematic issue of *Cognition 65: 2,3*) -.

Growing contiguity sets of situations, and growing similarity sets of situations form concepts on the experiential level by stabilization. Growing sets of satisfaction situations for an expression e under perspective **P** stabilize such that they become extensional representations of a concept. With the extensional representations which a learning individual has encountered there correspond neuronal activation patterns, built up and stabilized in the course of learning the concept on the basis of the examples that make up the extension. Stabilization consists in convergence of the internal similarity measure under the perspective, in opposition or contrast to other concepts under the same perspective. That a set of data stabilizes to become the representation of a concept, means that new data do not anymore change the internal similarity measure. Concepts that already exist in this way are the preconditions for further formation of new concepts and of features, i.e. concepts that figure in the formal analysis of other concepts on the theoretical level of concept formation. Similarity under perspectives also creates the preconditions for recognizing repeated contiguity relationships. In this spiral of interaction between the two principles of concept formation, attending to similarity and attending to contiguity, data get understood on different levels in analysis and re-analysis. The primary data are those situations which are encountered and understood as situational experiences according to the perspective-dependent selections made from the conceptual structures established so far at a certain point in development.

The similarity principle applied to data on different levels of concept formation gives rise to general concepts on the respective lower or higher levels, for example on the first level of situational impressions, and later on the higher level of individuals and events. The contiguity principle gives rise to historical concepts, especially particular event concepts and individual concepts. They are partial historical concepts which are understood as such by being seen as embedded or as being imbeddable into larger sets of situations connected by contiguity relationships such that coherence is preserved. This imbeddability of partial concepts into larger similarity and contiguity sets of situations, keeping intact stability and coherence, means to take the partial concepts as representations of realistic or complete concepts in the world, namely of individuals, and of real situations, and further on, of total sets of such entities as property extensions.

After historical concepts, i.e. concepts of particular events and concepts of individuals, have been formed they are used in analyzing and understanding situations. Herewith the experienced situations are analyzed or re-analyzed with respect to our standard ontology of individuals, where individuals are the participants in basic situations, which are characterized by activities, actions, and generally basic events, processes, and states. We now are able to understand situational impressions as realistic situations. Situations and individuals can then be the basis for construing general kind concepts by a new round of application of the similarity principle on this higher level. General kind concepts generalize over individuals in situations and thus contain the possible roles of individuals of a certain kind in situations. General event and action concepts generalize over situations containing the possible kinds of individuals that participate in certain roles within these situations. Such higher level general concepts then function in our understanding of situational impressions as being real situations. *Understanding* a situation means 1. imbedding it into stabilizing sequences of growing similarity sets of data, keeping intact stability. This is classification by general concepts. *Understanding* a situation means 2. imbedding it into contiguity sets of data, keeping intact coherence. This is identification of situations by historical concepts, especially individual concepts.

In this model of *Dynamic Conceptual Semantics*, a theory of concept formation and understanding, metaphor and metonymy are new ways of continuing series of satisfaction situations for an expression on the experiential level, and they are also new selections from available features and contiguity relationships on the theoretical level, according to contextually introduced perspectives. Both ways, the metaphorical and the metonymical, consist in the same cognitive operations as they play a role in all concept formation: similarity relations and contiguity relations are selected under perspectives and are used in structuring the growing sets of data into similarity sets and contiguity sets. Metaphor is based on perspective change and looking for similarity under the new perspective; metonymy is based on perspective change and contiguity relationships, such as relationships of part-whole, cause-effect, means-end, action-result, instrument-action. Important is that the concept from where the transfer of the expression originates, the source concept, is already stabilized to a high degree: Integrating the new use of the expression into the old concept, i.e. into the old data under the previous perspective would destabilize the concept. This means that the new case of use of the expression does not fit into the old concept. Young children, however, have not yet developed conceptual stability and thus cannot experience destabilization. They therefore would no recognize the new use as metaphoric, but as a normal extension of the use of the expression, whereby they do not consciously realize a perspective change and do not keep apart different perspectives, which rather leads to the formation of complex concepts, as they have been described by Vygotsky (1986), and does not result into polysemic complexes of concepts.

For early developmental stages of concept formation, which we find in small children, there is no distinction between normal language use and metaphoric or metonymic use. There is just language use guided by similarity and contiguity under changing perspectives. Only

when conceptual stability is almost reached the difference between standard use and creative use of an expression comes about. In metaphoric and metonymic language use the process of concept formation is pushed into a new direction of use of an expression due to the stabilization principle and by the change of perspective, often from a default or more common perspective, under which the expression has been used before and is used normally, to a context-dependent, locally introduced perspective. On both levels of thinking and understanding, the experiential and the linguistically explicated theoretical level, fairly subjective and local series of experiences and theories can play a role in devising similarity and contiguity relationships, besides experiences that are generally made and theories or stereotypes that are generally adhered to in a speech community. On these locally or globally established experiential and theoretical concepts the new perspectives are applied and provide by selection of recurrent aspects in previous satisfaction situations and contexts of use the experiential basis, or the explicated feature basis, of the metaphor which is further enriched by special situational experiences and features derived from additional knowledge acquired in the new situation of use. Selection and enrichment together create the new concept arising from the metaphoric use of an expression.

I shall first give a recursive definition of polysemy and show how the assumption of truthfulness of the utterance and general principles of concept formation play a role in understanding and designing a new interpretation of an expression. Then I shall discuss the cognitive approach to metaphor, exemplified by the theory proposed by Indurkhya. The goal is to show how both approaches together give a fairly detailed theory about the creation and interpretation of metaphor.

1. Definition and generation of polysemic complexes in interpretation

A perspective can be reconstructed as a second order concept of a certain kind, i.e. a concept of concepts. This is a set of concepts that can be discriminated under the selection of information the perspective provides. A perspective can be formulated by a question, or created by an interest or desire. Then the concepts are expressed by the predicates that are possible answers to the question or describe possible satisfaction situations of the interest or desire. For example: What kind of animal is this? What kind of instrument is this? What is its color? What is its behavior? What is its function? What about this applicant's health? How does he do economically? To look at something under perspective **P**, for example looking for an activity-property, a health property, a behavior property of someone means to attend to aspects of an individual or a situation which can be a specification of the kind of activity, the state of health, or the behavior shown in this case. For example, the metonymy *Get me the liver from the second floor* uttered by a physician, when preparing for a medical examination of a patient, involves a change from the perspective provide by the question "Which kind of organ?", under which the expression *liver* is primarily and normally used, to the perspective provided by the question "Which patient?". The contiguity relationship involved is the part-whole relationship. The metaphor *Get this pig into the bath-room* uttered

by a desperate father referring to his little son totally under the mud, involves a change in perspectives from "What natural kind?" to "What behavior-dependent appearance?" under which similarity is imminent between a stereotypical pig and the little boy.
A polysemic complex is of the same logical type as second order concepts are; it is a set of first order concepts. But this set is differently structured than a perspective. The internal structure of a perspective is that the concepts under or within the perspective form oppositions to each other, while the internal structure of a polysemic complex is that the concepts within the complex are related by metaphoric and metonymic relationships. The principles of forming these complexes of concepts are metonymic and metaphoric relationships, which amount to relationships of contiguity and similarity, respectively (cf. Jakobson 1960), across different perspectives. The relationships of similarity and contiguity are the same as in concept formation generally. The only difference is that they are not applied under a single perspective but in crossing the delimitations of a perspective and entering into another perspective. Such crossing over perspectives we also find in the use of words by small children, for example the famous example from Igelburger, adopted by Vygotsky as an example of a complex concept: The word for dog, let us say *dog*, was transferred by the child from dogs to furl coats and to a toothbrush, and it was transferred from dogs to shining round eyes and then to buttons. For the child this is a normal way of doing; but its gets pushed in language training towards keeping perspectives stable for the use of a word, i.e. it learns not to cross borders between perspectives deliberately. When stabilization of a concept under a perspective, in opposition to other concepts under the same perspective, is achieved, crossing the borders of the perspective in word transfer is possible in order to preserve stability of the primary established concept by *not* integrating into it cases of use of the same word that do not fit keeping intact stability. When that happens the transfer by similarity or contiguity can be called metaphoric or metonymic, respectively. Metaphor and metonymy presuppose an already stabilized concept and a conventionalized use of the word for this concept. Starting from there, new concepts are formed.
On the realistic level of properties and expressions a polysemic complex can be described by a recursive definition. P is a property realized in a set of situations. Another property P', expressed also by e, belongs to the same polysemic complex to which P belongs if it fulfils condition 2.

I. Recursive definition of a **POLCOMP**(e):

1. P ∈ **POLCOMP**(e)
2. If for all situations s in which P' is realized, the expression e is taken to be satisfied by s, and there is a P with P∈ **POLCOMP**(e) such that metonymic(P',P) or metaphoric(P',P), then P'∈ **POLCOMP**(e).

The expression e used under perspective **P** then expresses the property P' in the intersection of perspective **P** with the polysemic complex **POLCOMP**(e):

$\mathbf{P} \cap \mathbf{POLCOMP}(e) = \{P'\}$

This ordering on the realistic level of properties finds a corresponding ordering on the experiential level of concept formation. Let P be a quasi-concept in the process of stabilization or be a concept already stabilized. From there the polysemic complex of concepts is built one step further by adding a newly created concept P' under condition 2 specified in the definition as follows:

2'. If for all situations s which fall under concept P' under perspective $\mathbf{P}^i$, the expression e is taken to be satisfied by s, and there is a concept P with $P \in \mathbf{POLCOMP}(e)$ such that metonymic(P',P) or metaphoric(P',P), then $P' \in \mathbf{POLCOMP}(e)$.

Of course, there is a starter concept, the first established concept P expressed by e. To it the second concept P' is added if it conforms to condition 2'. Then more can be added, by originating either from the first or the second.

II. Generating polysemy on the experiential level:

Assumptions

1. Expression e is used with respect to situation s truthfully, i.e. s is referred to as a satisfaction situation of e.
2. e is used under perspective $\mathbf{P}^i$.
3. The concept that has to be assigned as being expressed by e under $\mathbf{P}^i$ with respect to s has to be eligible as a potential member of the polysemic complex of e.

Goal: Find a concept P' with $P' \in \mathbf{P}^i$ and P' being realized in s such that it fulfills the condition for being a member of the polysemic complex of e.

Procedure of concept construction:

I. Take the set of previous satisfaction situations for e.
II. Delineate within this set a (new) similarity set for e under $\mathbf{P}^i$, named: $S_{e,i}$. Choose $S_{e,i}$ such that s is similar to s', $s =_i s'$, for all $s' \in S_{e,i}$.
III. Extend that set with the new satisfaction situation s of e such that

1. this extension obeys $\mathbf{P}^i$-harmony and opposition to other $\mathbf{P}^i$-concepts, and that
2. we can construe a sequence of growing subsets up to $S_{e,i} \cup \{s\}$ with a converging decline, i.e. a stabilization, of the internal similarity degree, keeping intact opposition under $\mathbf{P}^i$. If that is not possible for $S_{e,i}$, then delineate another similarity set for e under $\mathbf{P}^i$ that satisfies these conditions, and name it $S_{e,i}$.

***Result*:** The quasi-concept $S_{e,i} \cup \{s\}$, by further use of e in the same way, approximates a concept, which is a reconstruction of a property realized in s.

In this way we can single out properties we have not realized before; they have been constructed as concepts by this very process of metaphoric or metonymic concept generation.

An example on the experiential level of concept formation would be that a child had a series of previous experiences of pig-situations, which built up his pig-concept by contiguity and similarity ordering. In these situations the pigs got themselves often quite dirty by roaming around in the mud. Now his mother scolds the child when coming home dirty by exclaiming *What a pig you are!* The perspective under which the mother sees the child, which also is the one under which the child has to understand his or her mother's exclamation, is the perspective of appearance and possibly also the perspective of behavior applying to the situation that caused this appearance. These perspectives select the typical behavioral aspects and the related appearance aspects in the experiential concept constituted by pig-situations. They are typical in contrast with the behavior and appearance properties of horses, dogs, and cats with which the child also has become acquainted in his surroundings. The child will understand his mother's exclamation by seeing his own behavior and appearance as upsetting to his mother, and hereby as negatively valued, and he will understand it cognitively by embedding his situation of behavior and his situation of appearance into a series of pig situations he has experienced previously. But now he will do this under the perspectives of behavior and appearance, and not under the perspective of natural kind. Under the two relevant perspectives he can continue a selection of pig-behavior and pig-appearance situations by adding to these, while keeping intact stabilization, the experienced situations in which he himself shows the behavior and the appearance that fits as a continuation of the respective experiences of pig situations. In this way he creates the new concept of being a pig, which is situated under the perspectives of behavior and appearance, contrasting to other behavior and appearance concepts. This concept can be truly predicated not only about pigs in the appropriate situations but also about the child himself, and possibly about other people. The primary, or standard perspective under which the word *pig* is used is the natural kind perspective, the secondary perspectives under which the metaphoric use is created are the perspective of behavior and the perspective of appearance after roaming through a muddy field.

On the theoretical level of concept formation a concept expressed by a term is explicated linguistically in the semantically characteristic syntagmatic field of the expression. This characteristic field consists of the set of general sentences held true in which the expression appears as a general term. The sentential contexts of this generalized expression in this set of general sentences form the semantically characteristic distribution of the term. It consists of the semantically characteristic predicates, and also conjunctions of these. They form the features of the concept, as far as they are linguistically expressed. A concept so explicated is called a linguistically explicated concept. The characteristic distribution of a term can be

restricted to a subset of the general sentences held true which by internal coherence forms a theory. Then the concept is a theoretical concept with respect to that theory. Within a theory those features or predicates can be selected which constitute the semantic difference of this term to other terms in the theory. These form the specific semantic characteristic distribution, which distinguishes the concept expressed by this term from the concepts which stand in opposition to this term. For example, there are specific features that distinguish a fox from a wolf under the perspective of natural kind, under the perspective of behavior, and under the perspective of appearance, especially under the perspective of color of the furl. In transferring the word *wolf* from the natural kind perspective to the behavior perspective in the metaphoric use in *John is wolf* or *this dog is a real wolf*, or even in *this wolf is a real wolf*, when predicated of a very fiercely acting dog or wolf, the perspective of behavior, which is at issue in these examples selects the behavior features of our wolf concept (within a certain theory) from which the specific ones that distinguish wolf-behavior from the behavior of other comparable animals are selected as being at issue in the metaphorical predication. The behavioral concept of a wolf is further on enriched by behavioral characteristics we find in the new situations to which the term is applied metaphorically. In the example *Look at this fox* while pointing to a man with red hair, the perspective of appearance, especially the perspective of hair color selects the fox-specific features which are at issue here.

The examples above serve to illustrate briefly how metaphor works in creating new concepts as part of polysemic complexes on the experiential and on the theoretical level of concept formation. Important is the role perspectives play. They are constituted by contextually or situationally available information about focus of attention, desires, interests. I shall now discuss briefly Indurkhya's theory of metaphors, which is currently the best and most elaborated treatment of metaphor among the cognitive approaches. I shall show that this approach has to be supplemented by taking into account selection through perspectives. The notions of cognitive schema or conceptual network used in cognitive approaches are equivalent to the notion of concept as it is used above. A cognitive schema is an abstraction from a series of examples; it is a representation of what they have in common. Because we are hardly able to fully express what a schema is of, for example, a dog, I prefer the extensional representation of a concept by a maximal similarity set of a stabilizing sequence of similarity sets of examples. A linguistically explicit representation of a cognitive schema or conceptual network is a set of general sentences held true, where the concept-expressing term is used under generalising quantification. Such a linguistically explicit representation is more exact than a graphically represented conceptual network because the linguistic representation not only makes explicit all the relationships between the concepts in the network, but also says whether the concepts are to be read under universal or existential quantification, or under a stereotypical generalization. The notion of a theoretical concept in the broad sense used above is a precise representation of a conceptual network. Keeping this in mind, the cognitive approaches to metaphor fit into the framework presented above, though they model some aspects in more detail, mostly by way of example, and let other

aspects remain in the dark, namely the role of perspectives and context dependence in general.

2. Indurkhya's theory of metaphors.

Cognitive theories on metaphor, such as N. Goodman's, G. Lakoff's or B. Indurkhya's, typically use the notions 'conceptual scheme' or 'conceptual network'. They understand metaphor as a transfer of a conceptual network or scheme from one domain, its primary domain, onto another secondary domain with quite a different ontology than the one of the first domain. How that is possible in an acceptable way usually remains in the dark. Here, I think, the notion of a contextually introduced perspective would be helpful. How can, for example, the local preposition *in* be transferred onto a so-called abstract domain? 'To be in war with another state', or 'to live in poverty', or 'to be in mourning' do not express local inclusion. Rather they express inclusion in a situation or a constellation of situations which we call 'war', or inclusion in constellations of situations which we call 'poverty' or 'mourning'. Here the preposition *in* is used less abstract as one might think in the first place. The situation of war, poverty, or mourning are quite concrete in space and time, and inside such concrete constellations the situations are placed which make up part of the life history of the individual which is said to be in war, in poverty, or in mourning. What happens is that the perspective of local ordering, in which the preposition *in* is primarily used, is replaced by new perspectives, namely the constellational orderings in which situations of a life history are placed in space, time, and causal contiguity with situations that make up a war, poverty, or mourning. These perspectives can be expressed by questions such as 'In what kind of political constellation does this state perform?', 'In what social-economical condition does this person live?', 'In what kind of emotionally relevant situation does this individual live?'. These questions already contain the word *in*, which is here specified by the perspective introduced by the respective question. In the answers, in which the above phrases are used, the preposition *in* is used under these contextually introduced or just assumed perspectives. The perspectives select the specifics for the inclusion at issue, namely here the inclusion of situations of a life history of an individual within a constellation of situations, which in our examples is characterized as war, poverty, or mourning.

Indurkhya, in his cognitive theory of metaphor, distinguishes the source domain with its corresponding source network from the target domain with its target network. The network is a semantic network, also called conceptual network, which structures its domain and especially determines the ontology in which the domain is understood. Primarily, independently of a specific conceptual network, the domain is just a sensory-motor data set. The idea is that the sensory-motor data set gets interpreted by making use of a suitable conceptual network. I want to stress, that we are not really consciously aware of the sensory-motor data-set itself, rather what we consciously perceive is already structured by the network at issue. According to Indurkhya, the network is projected onto the respective domain. A metaphoric transfer of a term from one domain to another, i.e. from the source

domain to the target domain, involves a transfer of the corresponding source network from the source domain onto the target domain.
He distinguishes similarity based metaphors from similarity creating metaphors. In similarity based metaphors part of the source network is identical with part of the target network. This identity constitutes the similarity and via this identical partial structure the application of the source network to the target domain is mediated. The similarity based metaphor involves a comparative: one thing is as the other as far as the identity goes. Within this class of similarity based metaphors he distinguishes syntactic metaphors from suggestive metaphors.
The syntactic metaphor is closed: the similarity is completely determining what is predicated in the metaphoric sentence. Only the identical part of the two networks is predicated. The syntactic metaphor gives an easier cognitive access to the target realm if the source network is more familiar, it highlights certain aspects and plays down others, and by this it furthermore makes a new abstraction possible of the parts which are highlighted. An example would be to understand an electric current by comparison with a stream of water.
The suggestive metaphor is open-ended. There is an initial correspondence or similarity between source network and target network, but the source network adds more features and relationships to the target realm, which have not yet been expressed in the target network. Suggestive metaphors have played a stimulating role for the growth of science.
In similarity creating metaphors (or projective metaphors) the source network is projected onto the target domain, although there is no similarity between the source network and the target network to begin with. Though the target realm is primarily referred to by means of the target network, the structuring of the target domain by the target network is then disregarded and the source network is directly projected onto the target domain, reorganising its ontology. A new description of the target realm is provided, based on the metaphor. Examples are revolutionary metaphors in the history of science by which a traditional description of the target domain gets discarded and a new one established. As an example he gives the replacement of Newtonian mechanics by Einstein's relativity theory.
Other examples are poetic metaphors, for which Indurkhya gives as example a poem by Eavan Boland in which, among other metaphors, a hillside covered with white flowering bushes of hawthorn is presented as an "ivory, downhill rush", " All I wanted then was to fill my arms with sharp flowers, to seem from a distance, to be a part of the ivory, downhill rush". The poet had always known that one should not touch hawthorn, that it might be dangerous and cause desease, and he concludes with "So I left it stirring on those hills with a fluency only water has, And, like water, able to redefine land." Indurkhya assumes that we hardly ever have thought of these white flowers as water, haven't seen the similarity before it was created by the poet.

3. Criticism and extension of Indurkhya's theory

I want to make three points:

1. In similarity based metaphors perspectives are necessary to single out the relevant similarities. Even for such a simple metaphor as 'John is a wolf' we find as identical parts of the two conceptual networks that John, a human, and a wolf have both two ears, have both two eyes, have a mouth, have teeth, etc. However, all these identities are not meant to be predicated of John in the metaphor. We need the perspective of behavior, and may be more specific the perspective of behavior in conflicts and fights to select the right aspects that make up the similarity which is relevant here.
2. Not only network comparison or network projection makes metaphors, which means that metaphor is not only achieved on the level of linguistically explicated, i.e. theoretical concept formation. Rather also direct comparison of the target realm with the source realm is possible, by which, without the explicitness of a conceptual network, the target item can be placed together with the source items under a perspective which directs us to realize a similarity under the perspective. The target domain is directly seen in the light of the source domain. Hereby the focus of attention is directed by a perspective or context, under which certain aspects of both domains become conspicuous. This has been illustrated above where I sketched how metaphor works on the level of experiential concepts, which are not explicated in linguistically expressed semantic network structures.
3. The similarity creating metaphors create a similarity for someone who has not yet seen directly, in experience, the target realm as being reflected in certain aspects of the source realm, if seen under a certain perspective or seen in a certain context. For the poet they are not similarity creating. He must have experienced the similarity in perception and imagination. Thus he has found an existing similarity on the experiential level for which he uses the explication by means of the available source network. In the poem only the somewhat global perspective given by a wider distance from the hawthorn could make it similar to the ivory rush of water into which the poet would have leapt for a bath if he were not taking into account the dangers of the hawthorn. He can take this into account by switching from that more global perspective to the local one. He keeps in fact the target network intact and confronts it with the source network, even so far that he realizes that the closer reality of the hawthorn makes him leave the imaginary world of the splashing water that is only for anglers and wanderers astray in "the unmarked lights of a May dusk", where the fluency of water is "the only language spoken in those parts". Against Indurhkya’s claim that in creative metaphors the target network is typically discarded, we may observe that the target network is not discarded in this poem, rather it is made repeatedly use of in the course of the poem as a contrast to the source network, and it finally subjects the source network under it. The decision to avoid close contact with the hawthorn is made against the attraction introduced by the water metaphor. Here again reality wins from the beautiful dream, which is merely an appearance in 'the unmarked lights of a May dusk".
In a trivial sense all metaphors are similarity creating, namely for those that have not yet thought of the similarity at issue. It is a matter of degree how probable this situation is for different persons. Strictly speaking, we have to admit that there is no creation of similarity. A similarity that is not there, cannot be created. Rather it comes into focus within the

direction and selection, which a context or a perspective provides. Therefore similarity under a perspective is a precondition for the creation of metaphor and a metaphor is not a pre-condition for the creation of similarity.
Selection and specification of relevant features by means of perspectives is quite different from canceling features that are not compatible with the new domain, though one might think that selection and canceling are just the converse formulations of the same process. If we call the man John a wolf we just predicate of him a selection of wolf features under the perspective of social behavior. According to canceling, we would predicate of John, in saying that he is wolf, also that he has a liver, kidneys, a hart, two eyes, etc. All this is not cancelled, because man and wolf both have all these features in common. Certainly we don't mean all that when we metaphorically transfer the term *wolf* from the animal to the human. On the other hand a perspective, by directing attention to certain aspects of the target domain, can also add features that are relevant in the metaphorically construed concept, as we have seen in the examples of the use of the preposition *in* above. The notion 'perspective' is essential for describing how metaphor works and it is essential for understanding the whole process of concept formation of which metaphor is just a part. In fact metaphor is just a normal part of concept formation, which involves for the new cases of use of the linguistic expression a change in perspective. The change of perspective gives rise to a new concept if the use of the expression is continued under the new perspective.

4. Perspective change in metonymic transfer and the metaphor-metonymy switch

In metonymic transfer of an expression, the perspective changes along contiguity within a situation. For example, a typical part of a whole is the source from where the expression is transferred on the whole as the target. The transfer here goes along the contiguity relationship “part-whole”, as in the liver-example above. The change of perspective proceeds along different contiguity relationships, whereby we can formulate the perspectives in a double question pertaining to both parts of the relationship, whereby answering the first part also answers the second, for example:

- Which typical part of which object? Example: *Bring me the liver from floor 3*. Or *A sail approaches the harbor.*
- Which typical material of which instrument? *The iron includes a steam device.*
- Which typical instrument is used in which activity? *The shirt will be ironed in a minute.*
- Which typical activity does this object perform? *The guard is on duty.*

There are cases of transfer of expressions in which it is not clear whether we should classify these as metaphors or as metonymies. For example the use of temperature words for characterizing colors, or for characterizing people. Thus we speak of a cold color or of a cold person. There is a metonymic relationship involved from cause to effect, namely from

feeling a cold temperature to the psychic state that goes with that, feeling cold and stiff. A cold color now is supposed to cause that same kind of feeling. Here we can say that a metonymic relationship from effect to cause transfers the term *cold* from the cold, stiff and somewhat distanced feeling to the color that causes it. On the other hand, we also can understand the transfer of *cold* from temperature to colors as a metaphoric transfer by means of a similarity, defined here in terms of a relational identity; temperature and color are called *cold* because of the same relationship holding between the temperature or color as a cause and the feeling cold, stiff, and distanced as the effect. Likewise the shift of the term *cold* from feelings to persons can be explained by metonymic transfer; a person is called *cold* because he or she shows a cold, stiff, and distanced behavior, which normally is caused by cold surroundings, or because he or she causes a feeling of coldness and distance in others, or because of both reasons combined. Here the perspective change from part to whole, and from cause to effect is at issue. However, also an explanation by metaphoric transfer is possible via a similarity between cold surroundings and persons due to an identity of a causal relationship form cold surroundings to feeling cold, stiff, and distanced, including the respective behavior, and from persons to the same kind of feeling and behavior.

A similar example is the use of the term *noise*, which is transferred from the auditory realm to the visual, and generally to all kinds of realms of information, which can be muddled by interfering signals, the noise, in the medium and channel in which the information is encoded. Also here we can construct a metaphor by similarity via an identical relationship between intervening acoustic signals which impair the recognizability of an intended acoustic signal, to the same kind of relationship in other media and channels. We can also use the relationship as a path for metonymic transfer; the acoustic noise cause a muddled acoustic signal, also being called *noise*, this signal being similar in its chaotic structure to signals in other media, which then also can be called *noise*, and from there, the cause for these kinds of signals can be called *noise* in the respective media. The perspective shifts involved here are from cause to effect, from effect to cause, and from one medium to another.

Another example is that a father can be called *a real mother* to his child; the term *mother* is transferred metonymically from the mother to the typical behavior of a mother, being mothering. If a father shows the same kind of behavior, the metonymic relationship of transfer is reciprocal from the behavior to the person, such that the father is called a mother. We can also say that the transfer of the term *mother* from a typical mother to a father of similar behavior is metaphorical by similarity between the mother and the father on the basis of the relational identity to the mothering behavior.

Generally, we can say that where similarity across perspectives is due to a relational identity we can speak of a metaphor based on that identical relationship; and we can likewise speak of a chain of metonymic transfers along this relationship in both directions, following in the first step the relationship in one direction, and then following the reciprocal relationship in the other direction.

The conclusion is that there is a meaningful difference between metaphor and metonymy as two ways of construing new concepts from old concepts, being based on similarity, i.e. on identity of one or more aspects between objects or situations, or being based on contiguity following specific kinds of contiguity relationships in the perspective change. If the identical aspect is a relational one, i.e. involves a contiguity relationship within an object or situation, the construction of the new concept to which the term is transferred can be viewed as either a metaphor or as a chain of metonymies along the relationship and its converse.

5. References:

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