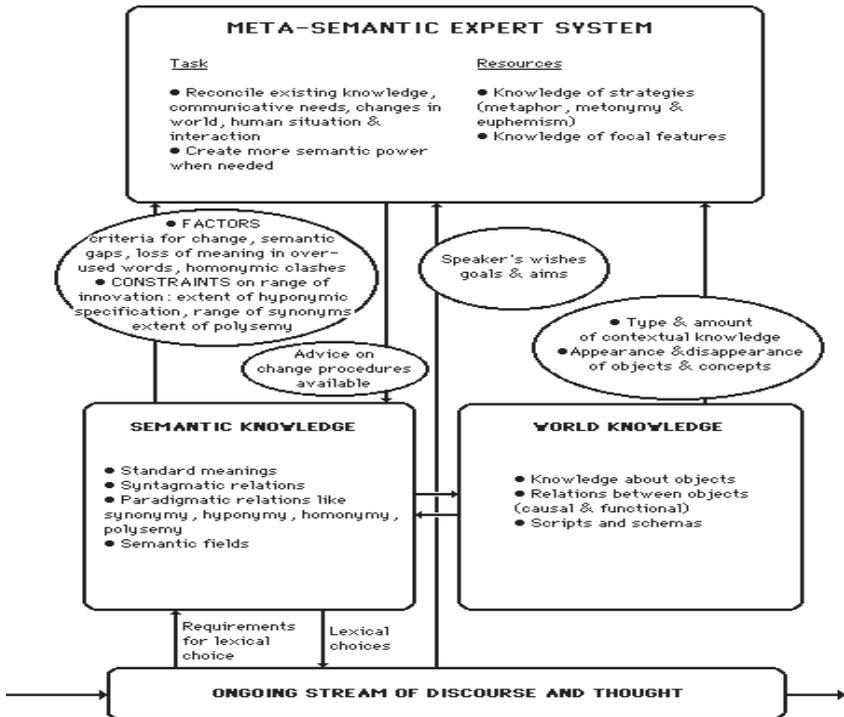


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ELEMENTS FOR AN INTEGRAL THEORY OF SEMANTIC CHANGE AND SEMANTIC DEVELOPMENT

1. Introduction

Over ten years ago David Clarke and I proposed what we then called the *MES* or *Metasemantic Expert System* to account for the use of metaphors and metonymies in ordinary discourse (Nerlich & Clarke 1988; 1992a; Nerlich 1989). We represented it in the following way:



After a five year interlude, when we¹ concentrated on discovering the historical antecedents of modern semantic and pragmatic theories of language, we have started to fill in some gaps that were left open, intentionally or unintentionally in this initial model. We bolstered some links with modern theories of cognitive semantics, with research into conceptual metaphors and metonymies and prototype theory (Nerlich & Clarke 1992a), especially shifts in prototypes (Nerlich & Clarke 1992b); we explored a third component of the *MES*, synecdoche (Nerlich & Clarke 1999; Nerlich & Clarke 2000); we also examined some-long term effects of the use of the *MES*, polysemy (Nerlich & Clarke 1997), and looked at the uses people make of polysemy in ordinary discourse (Nerlich & Clarke 2001; Nerlich & Chamizo Dominguez 1999); and finally, we tried to find out how the *MES* or rather a competence for figurative language use and the exploitation of polysemy could be acquired in semantic development (Nerlich, Todd & Clarke 1998; Nerlich, Todd & Clarke 1999; Nerlich, Todd & Clarke, in prep.). More recently we have begun to take account of research into blending, mainly fostered by Gilles Fauconnier and Mark Turner (Nerlich & Clarke 2000).

In this article we shall focus on certain facets of our historiographical and our theoretical research, and try to show how both strands can contribute to a new understanding of semantic change and semantic development. The issue of ‘blending’ will give us an opportunity to explore links between the present and the past. Our research into language acquisition might open up possible links between the present and the future.

2. Blending the past and the present

Theories of ‘blending’ were developed in cognitive linguistics in an attempt to model the processes of metaphor creation and understanding. Almost twenty years ago George Lakoff and others first put forward a two-domain model in which a conventional conceptual metaphor is seen as a partial mapping of one conceptual gestalt-structure or source-concept, e.g. JOURNEY onto another conceptual gestalt-structure, the target-concept, e.g. LOVE. This means that the source domain, say JOURNEY projects information directly onto the target domain, say LOVE, through structural transfer (see Oakley 1998:325). *They loved each other to the ends of the earth* is an example of an

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utterance based on this type of conceptual projection. The target concept of LOVE can also be metaphorically structured by other source-concepts such as WAR or MADNESS.

Another example would be the transfer of human characteristics, such as being able to recognise somebody or something, to the domain of computers. We might say, for example: *My computer doesn't seem to recognise this new printer*, when trying to print out an urgent letter. And going one step further, we can create a meta-metaphor and say: *I wish we were back in the good old days when pens recognised paper and when paper recognised envelopes*. Here the conventionalised computer metaphor is transferred to the 'novel' domain of pen-and-paper communication, that is, letter writing in the good old sense of the word (for this example, see Laurie Taylor, *Times Higher Education Supplement*, 15 January, 1999, p. 60).

In contrast to Lakoff's early models of metaphor, Fauconnier and Turner are now working with a whole array of mental spaces (see Fauconnier 1998), and blending is seen to occur when two or more input spaces in cooperation with a generic space project partial structure into a fourth space known as the blend, the blend inheriting partial structure from each input space and developing its own emergent structure (Oakley 1998:326). In 1996 Mark Turner expressed a central assumption underlying this type of blending research in the following way:

Meanings are not mental objects bounded in conceptual places but rather complex operations of projection, binding, linking, blending, and integration over multiple spaces. (Turner 1996:57)

To fully understand the import of the concept of blending or conceptual integration for contemporary semantic thought, it might be useful to reconstruct the contexts in which those concepts appeared, albeit sometimes in a veiled form, for the first time (see Nerlich & Clarke 2000; some of the following overlaps with this article). We hope that such a reconstruction may lead to a critical evaluation of contemporary concepts and theories. For theories of blending to develop a few preconditions must be fulfilled:

- The view that language is a mere instrument for the representation of thought has to be replaced by a view according to which thought and language are intricately linked up with one another, and according to which they structure each other mutually.
- The view of word meaning as being based on a one-to-one fixed mapping relation between a word and a well-defined object or concept must be abandoned for a view of meaning as having fuzzy boundaries, as being elastic and context-sensitive.
- The view of word meaning as pinpointing a real or ideal object or concept must be replaced by a view of word meaning as delimiting a roughly drawn and changeable 'area of meaning(s)'.

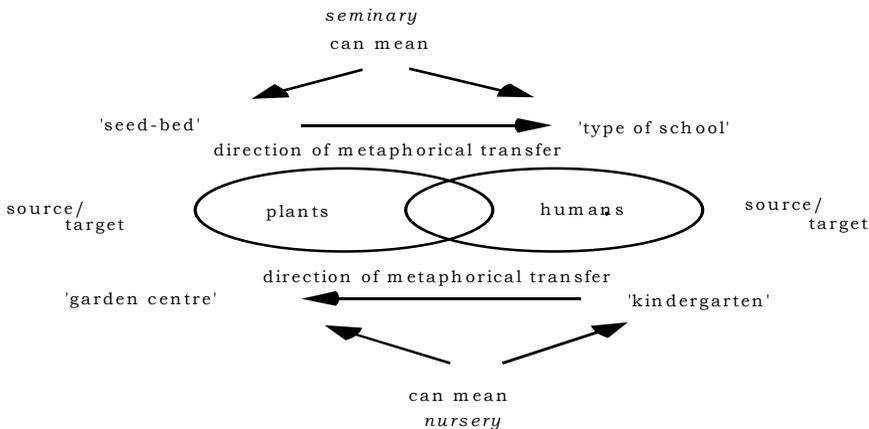
- The view that sentence meaning is the sum of the meanings of the words used must be replaced by a view of sentence meaning as being the result of integrational and inferential processes feeding on clues other than those contained in the meaning of each word in isolation, that is, clues arising from the co-text of the sentence and the wider context of the situation of discourse (the situation of perception, memory, discourse, and culture).
- The view that there is a radical distinction between the literal and the metaphorical in grammar and semantics has to be replaced by the view that language (and thought) are metaphorical through and through (see Schmitz 1985; Gibbs 1994; Schumacher 1997; Lakoff and Johnson 1999).

All these insights into the construction of meaning were in the air before and during the 19th century and are not the reserve of the 20th century alone (see Smith 1982; Nerlich 1992; for a summary of what cognitive linguists know about their predecessors, see now Mark Turner's contribution to the cogling list, 30 January, 1999: X-UIDL: 284bda4409504c43ad4da2924844ab36). However, these views needed to be pitched *against* other dominant views (e.g. truth conditional and/or componential semantics) to lead to a real scientific revolution. This only happened in the last part of this century.

The main foundations for a dynamic conception of meaning were laid in the 18th century with the works of Giambattista Vico and Du Marsais, for example. They both, in different ways, held the view that metaphor was not an artifice of language but a natural way of expressing and talking about the world (see Nerlich 1998). They overthrew the then predominant view of metaphor as a dangerous impediment to the clear transmission or communication of thoughts. This view had still been held by Locke, a philosopher who, ironically, boosted metaphor research by pointing out that *our basic mentalistic concepts are metaphorical in origin* (Leary 1990:14). Quite insidiously, the insight into the metaphorical nature of some words and concepts, such as *spirit*, undermined the representational view of language. And once liberated from the single function of representing things or thoughts, language could become the free possession and tool of the communicating subject. The language user could come into focus instead of the language, and this again facilitated social, cognitive, and pragmatic insights into language and meaning.

The 18th-century insights into the nature of meaning and metaphor had a profound effect on the philosophies of language elaborated in the 19th and early 20th centuries which all offered alternative avenues of attack on the problem of meaning. After centuries of philosophical disparagement, the crucial role of metaphor in language and in the structuring of thought was recognized by the likes of Herder and Humboldt, Goethe and Gerber, Nietzsche and Biese, Wegener and Gardiner, Mauthner and Stählin, setting the stage for such 20th-century developments as Bühler's (1934) declaration that metaphor is fundamental to all concept formation (see Nerlich & Clarke, in press).

By the beginning of the 20th century, a theory of metaphor as blending was very much in the air, sparked off, perhaps, by Philipp Wegener's work (Wegener 1885). A fan of Wegener's and an acquaintance of Bühler's, the Egyptologist Alan Henderson Gardiner, pointed out, in his book *A Theory of Speech and Language* (Gardiner 1932) that under the guidance of the situation of discourse the meaning of a word or a sentence emerges as a **fusion** between the traditional range of meanings of the word and the thing-meant, between what is said and what is meant. The process of fusion or as Gardiner says, **blending** (p. 169), is most spectacular in the case of metaphor. This can be illustrated with the following examples (not taken from Gardiner):



How you ‘concoct’ your metaphor or your blend depends on the available lexical resources, the communicative needs, and the context of discourse.

Going one step beyond Gardiner in his *Theory of Language* (Bühler 1934), Bühler wanted to *find the sematological core of a well-constructed theory of the metaphor* (Bühler 1934/1990:392/343). And this semiotic core lies in the fact that in metaphor production and understanding we are dealing with a mixing of spheres, **Sphärenmischung**, that is, with the *blending* of linguistic and non-linguistic knowledge. Bühler's most favourite example is the metaphor of a butterfly ‘knitting socks’ – a metaphorical description of the movement of its antennae.

A duality of spheres [...] and something like a transition from one to the other can often be detected in the experience [of understanding], and this often vanishes only when idiomatically familiar constructions are involved. (Bühler 1934/1990:392–393/343)

Bühler compares this process of blending with binocular vision or with a visual projection that passes through two filters covering each other partially.

Another less well known psychologist of (religious) language, Gustav Stählin was also interested in metaphor and especially in metaphor as one of the *psychological* processes involved in language change (see Schumacher 1997). He too developed a theory of ‘blending’ as a by-product. What Lakoff calls target domain, Stählin called *Sache*, and what Lakoff calls source domain, Stählin called *Bild*.

[...] der metaphorische Ausdruck steht jedesmal in einer gewissen Spannung mit dem Zusammenhang. Er stammt aus einem Gebiet, von dem hier nicht die Rede ist, und wird auf ein Gebiet angewendet, auf dem er nicht daheim ist. Er ist der Name eines Gegenstandes, der hier gar nicht “gemeint” ist, und muß erst übertragen werden auf den Gegenstand, der hier in Rede steht. Er ist ein Fremdkörper in dem Zusammenhang und kann mindestens als solcher zum Bewußtsein kommen. (Stählin 1913:321–322)

[...] kurzum: ich ziehe nicht nur das Bild in die Sphäre des Sachgegenstandes, sondern auch die Sache in die Sphäre des Bildes hinein. Es findet ein Austausch der Merkmale, eine Vereinigung der beiderseitigen Sphären, eine Verschmelzung von Bild und Sache statt. (Stählin 1913:324)

In the 1970s and 1980s the theoretical and empirical work on metaphor accomplished by Bühler and Stählin was rediscovered and compared to the interaction theory of metaphor developed by Richards and Black. Nowadays, one can see similarities between the older theories of metaphor and the newer cognitive theories of metaphor and blending. There are, however, a few differences. The older theories of blending are all limited to the two domain model. The more elaborate multi-space model developed by Turner and Fauconnier eludes them.

And yet, one should not forget that others before Lakoff, Turner and Fauconnier had begun to tell the tale of the metaphoricity of language and the embodiment of thought. These investigations were interrupted in the middle portion of this century by the Second World War as well as by the rise of behaviourism, positivism and structuralism(s). Retelling the story of these beginnings of a theory of blending might give modern theories firmer roots, roots that might prevent them from being swept away by the next wave of positivism and reductionism.

We have looked at some examples of a *psychological* investigation of metaphor at the turn from 19th to the 20th century. However, one should not forget that metaphor and metonymy, generalisation and specialisation, that is, synecdoche, were at the core of the historical semantic research programme. These ‘figures of speech’ were investigated as types of semantic change linked, just as today, to types of association processes between ideas, such as similarity and contiguity (see Nerlich 1992). Here too, then, one can see a link between the past and the present. The next section of this article will however focus entirely on the present and the future of research into metaphor, metonymy, and polysemy.

3. The role of metaphor, metonymy and polysemy in research into language development and language use

Metaphor, metonymy and synecdoche are three fundamental ways in which language conveys mental representations. They form the three corners of what Seto calls ‘the cognitive triangle’ (Seto 1999). Metaphor is based on ‘seeing similarities’ (e.g. *She is the sun of my life*), metonymy is based on ‘exploiting connections’ (e.g. *I am giving a paper*), and synecdoche is based on understanding relations between categories, on ‘understanding class inclusion’ (e.g. *Give us our daily bread*).

These three ‘figures of speech’ are *universal* semantic and cognitive *procedures* or *strategies* which make it possible to communicate novel experiences effectively. They also give rise to *polysemy* historically, structure meanings synchronically, allow adult speakers to vary word meanings contextually, and make it possible for children to convey meaning with a very restricted set of lexical items at their disposition.

Semantic development is the process whereby children acquire the lexicon inherited from their elders and learn how to use it efficiently. This includes, amongst other things, the acquisition of what one could call a *figurative competence* which allows children to express new things with the old words they have.² This process of acquisition changes gradually depending on the number of old words children have at their disposition, at first very few, a time when they have to resort to (metaphorically, metonymically, and synecdochically based) over- and underextensions so as to make themselves understood; then more and more until the children’s lexicon matches the adults’. In between they learn not only how to map the right things and concepts onto the right word-forms and vice versa, but also how to see relations of similarity, contiguity and class-inclusion between things and concepts and how to exploit them in their search for the most effective means of linguistic expression and their construal of a world (see Nelson *et al.* 1978).

Twenty years ago Dan Slobin claimed that the essence of language itself can only be discovered through a collaboration between developmental psycholinguists and historical linguists. Discussing the rhetorical aspects of child

² *Die allgemeine Sprachkompetenz [...] umfasst eine Metaphernkompetenz – die Fähigkeit, gewisse sprachliche Gebilde in fast unbeschränkter Fülle produzieren und verstehen zu können und das Wissen um ihre jeweilige Angemessenheit und Wirkung in konkreten Kommunikationssituationen.* (Schöffel 1987:57–58). *Mit dem Hineinwachsen in seine Muttersprache erwirbt der Mensch auch die Fertigkeit zu metaphorisieren. Es ist kein Zeichen besonderer Sprachmächtigkeit oder hoher sprachlicher Gebildetheit, Metaphern zu schaffen und zu gebrauchen. Seine Sprachfähigkeit ermöglicht es jedem Menschen, die metaphorischen Potenzen seiner Muttersprache zu nutzen und auszubauen, und zwar ebenso selbstverständlich wie alle ihre Leistungen.* (Ingendahl 1971: 221) (quoted in Schumacher 1997).

language (Slobin 1977:187), he wrote that the first meanings to be acquired should be closest to the child's non-linguistic strategies for representing events to himself. He takes up Eve Clark's suggestion that such meanings *can be regarded as cognitively simpler than others* (Clark 1973:180) and argues that when a new form enters a whole language its range of meaning is likely to be restricted too to this cognitively simpler core. The extension of meanings from that core must also follow *natural cognitive patterns*, whether occurring in ontogenesis or in other diachronic linguistic processes (Slobin 1977:206–207).

We claim that these natural patterns are based on metaphor, metonymy, and in less spectacular fashion on synecdoche.³ We also claim that Slobin's programme of studying developmental psycholinguistics and historical linguistics jointly has not found any followers to date, at least in the field of semantics. There is an urgent need to study metaphor and metonymy as *universal* mechanisms of semantic structure, semantic change *and* semantic development. We shall now try to demonstrate what a theory of metonymy can contribute to an understanding of certain aspects of language acquisition.

According to older theories of metonymy, metonymy enables us to say things quicker, to shorten conceptual and linguistic distances. Instead of saying *The water in the kettle is boiling*, we say *The kettle is boiling*. Our hypothesis was that this function of metonymy as an 'abbreviation device' (and to some extent a type of cognitive and referential ellipsis) can be detected in child language as well as in adult language. Metonymy should be seen as a universal strategy of cost-effective communication used by children as well as by adults, most effectively exploited in headlines, such as *Brains at Science Museum crack Crystal Skull mystery* (see Nerlich, Todd & Clarke 1999).

When looking more closely at examples from early language use we observed that metonymical (as well as metaphorical and synecdochical) relations seem to be exploited in *overextensions* produced by children up to age 2;5. We called these 'compelled metonymical overextensions' as they are based on the fact that at this age a child's vocabulary, category and conceptual systems are still relatively small and unstructured and this scarcity *compels* them to extend already known words to cope with increasing communicative demands, to comment on what they see and to request what they want. Here are some examples:

Examples of one-word sentences are taken from (Barrett 1982).

³ We have not looked extensively at synesthesia. One could perhaps say with Marks and Bornstein that *the structures of synesthetic metaphors that are shown to be present in the earliest months after birth would constitute Anlagen, or primitive forms, for the plethora of more sophisticated, figurative expressions we commonly encounter and create in language and literature.* (Marks & Bornstein 1987: 64)

Wheel: for a wheelbarrow wheel (1;8); a wheelbarrow (1;10); toy wagon/a ring (1;11); more appropriate lexical item learned: *wheelbarrow* (1;11)
[based on part-whole relationship]

Choo-choo: for trains (1;7); bradyscope (1;9); airplane/wheelbarrow (1;10); streetcar/a trunk (1;11); more appropriate lexical item learned: *airplane* (1;11), *streetcar* (1;11), *wheelbarrow* (1;11)

We also looked at a corpus of two-word utterances collected by Braine (1976). In the examples we indicate the metonymical relation that is exploited, as well as the illocutionary force of the utterance.

David (1;9): want pocket. [container-contained] {request}

David (1;10): here hello. [words-object]
{comment}

Situation: indicating or identifying toy telephone

David (1;10): here more book. [instrument-action] {request}

David (1;10): want more spoon. [instrument-action] {request}

David (1;10): gimme that blow. [instrument-action] {request}

Situation: wants to blow the match out

David (1;10): more put in. [action for place] {request}

Situation: has been putting tinker toys in their box, apparently wants to put somewhere the pieces the adults are using

Later on, when children have acquired a sufficient body of words to express their more and more complex needs and desires, together with a growing body of domain knowledge or world knowledge, they begin to use metonymy in a creative way, what we called **creative metonymical shrinking**. As an example we shall tell you a meaning creation story, an approach advocated recently by Gerd Fritz: *Was praktisch möglich ist, um die Wirklichkeit des Bedeutungswandels besser zu verstehen, ist das Erzählen und Betrachten von exemplarischen Kommunikationsgeschichten* (Fritz 1998:28).

Matthew, our son, started school in January 1996. At first we thought he might eat the school dinners. But he didn't like them and insisted on bringing his own lunch box like most of his friends do. So in the end we relented and, walking to school in the morning, he brandished his lunch box saying to everybody he met: "I love being a lunch box." Then he thought a bit and said: "I love being a sandwich, I really like being a sandwich" – one could really see the metonymical chain extend from his arm through the lunch box to the sandwich and back. What he meant by this metonymical utterance was that he liked to be part of the children who were allowed to bring a lunch-box (i.e., a sandwich) to school and were not forced to have this horrible stuff like potatoes and veg served at the school dinner!

Both compelled and creative metonymies are based on semantic *strategies* which are not completely different from adult communicative strategies, of which metaphor and metonymy are the most effective (as Ann Dowker says, the child does what the adult does: express the inexpressible, see Dowker, in press, pp. 8–9), and, we should add: both use similar cognitive and linguistic strategies.

Let us now look at metaphor as another important communicative strategy used by adults and children. As is well known, producing and understanding a novel metaphor requires the meaningful integration of two incongruous domains of knowledge or experience in a manner not previously considered. How do children acquire a metaphoric competence, that is, the ability to create and understand metaphors? Two things are required: *knowledge of domains and categories*, so as to be able to override them, that is, to build metaphorical bridges between them, and an ability to *see similarity* in dissimilar objects and events. Knowledge of domains increases naturally with a child's growing experience of the world – it is, in fact, a life-long task. This life-long acquisition of domain knowledge can be illustrated by looking at an example. When reading the following sentence in Alison Graham's column in the *Radio Times: The first Sarah – Surviving Life focused on the kind of Pop Tart philosophising indulged in by the rich and self-absorbed* (“A right royal mistake” 24–30 October, 1998, p. 148), the reader has to know what a “Pop Tart” is so as to understand the metaphor. This type of domain knowledge can only be acquired when you have children who pester you to buy this rather disgusting toastable breakfast ‘tartlet’ in the supermarket. So, domain knowledge acquisition is a life-long task, but what about seeing similarities: how does the ability to see similarity evolve?

There seems to be a developmental sequence going from compelled metonymically or, metaphorically and even synecdochically based *overextensions* to more creative *pretend-naming*, to the use of *similes*, to the production and then understanding of *metaphors*. These can be regarded as overlapping stages in a child's semantic development. In overextensions the child *explores* the ‘space’ of conventional categories (as when he or she says “doggy” when pointing to a horse); in pretend-naming the child starts to see and *use* one thing *as* another thing (as when a child picks up a leaf from the ground, puts it between two gloves and asks Mummy to “eat the sandwich”); in similes he or she starts to verbalise *perceived* similarities (*Mummy, mummy, this chimney looks like a giant's pencil*), which sets the child *en route* for the metaphorical exploitation of *conceptual* similarities between whole incongruous domains of experience, *en route* for a blending of mental spaces, as described in section 2 of this article. One child, for example, called a puddle of oil “a dead rainbow”. Our son Matthew said recently that having repeated nightmares is just like an illness, or like a virus, only it attacks the mind not the body, but nobody has as yet been able to find the right medicine to cure children from nightmares (Matthew, aged 7;11). Seeing similarities shades gradually into constructing analogies. Creating

compelled metaphorical overextensions shades gradually into making creative metaphorical leaps.

Is this true? It has been argued for a long time that overextensions are not metaphors (see now Dowker, in press).

Denken wir uns ein Kind, das an den kleinen Gummiluftballons [...] seine Freude hat [...]; dieses Kind, in der Stadt erzogen und wenig mit den Erscheinungen der Natur vertraut, erblickt eines Abends zum ersten Male den in nebligem Dunst aufgehenden Mond und sagt bei dessen Anblick: 'Sieh dort oben den schönen Luftballon'! Für den Mond und den Luftballon ist es nicht schwer das tertium comparationis zu erkennen; aber von einer Metapher könnte in diesem Falle nicht die Rede sein. (Elster 1911:114)

However, we would argue that metaphor, metonymy, and synecdoche **as cognitive strategies** are present from birth, but they need the child's interaction with the world and other human beings to grow into the fully fledged production of metaphors, metonymies and synecdoches as figures of speech.

In synecdochical speaking and inferencing children explore the space of conceptual categories, in metonymical speaking and inferencing children explore the space of established referential and semantic relations, in metaphorical speaking and inferencing children discover novel relations and engage in analogical reasoning – and so do adults. These are all aspects of cognitive and semantic learning which continuously structure our understanding of the world and of each other.

Understanding conventional and novel metonymies and metaphors produced by **others** is a different matter again, because children have to integrate domain knowledge that might *not* match their own developing, and to some extent restricted knowledge of domains. This was illustrated nicely in the following example: "*Mutter*: 'Heute ist Landtagswahl, da müssen Papa und ich unsere Stimme abgeben.' *Kind*: 'Aber dann könnt ihr ja nicht mehr sprechen!'", Andreas Blank, p.c.). As is common in language acquisition, there is a lag between production and comprehension of metonymy and metaphor, which also applies to the understanding of jokes, riddles and puns. It seems that based on a type of (innate?) 'figurative competence', children can create metaphorically and metonymically based overextensions and later on creative metaphors and metonymies on the level of **parole**. However, they still have to 'learn' the metaphorically and metonymically based polysemies which characterise a language on the level of **langue** and in various types of **discourse** – that is, on the level of social norms. They also have to learn (in a different sense) to accept that adults (whom they normally perceive as rule-imposers and rule-followers) can sometimes break the rules and create novel metaphors and metonymies. When Brigitte once said to Matthew after he came home from school: *Wow, you have eaten your whole lunchbox* (meaning the contents of the lunchbox), Matthew laughed his head off and told her *not to be so silly!*

4. Conclusion

Investigating the **synchronic rhetorical procedures** whereby we create new meanings from old can sharpen our view for fundamental semantic and cognitive processes. Investigating **diachronic mechanisms of semantic change** can sharpen our view for fundamental semantic and cognitive processes.

Investigating the ways in which children produce and understand new meanings can sharpen our view of how these fundamental semantic and cognitive abilities actually develop. And linking these three fields of investigation can advance our theorising in the social and cognitive sciences. This would provide a direct insight into the linguistic and social roots of cognition and the cognitive roots of linguistic structures.

References

- Barrett, Martyn D.** (1982). "Distinguishing between prototypes: The early acquisition of the meaning of object names." [in:] Stan A. Kuczaj (ed.), *Language Development*, vol. I.: *Syntax and Semantics*. Hillsdale, NJ: Lawrence Erlbaum, 313–334.
- Braine, Martin D. S.** (1976). *Children's First Word Combinations*. Monographs of the Society of Research in Child Development 41 (Serial No. 164).
- Bühler, Karl** (1934/1990). *Theory of Language. The Representational Function of Language*. Amsterdam and Philadelphia: John Benjamins. (English transl. by Donald F[raser] Goodwin. Edited with an introduction by Achim Eschbach.)
- Clark, Eve V.** (1973). "Non-linguistic strategies and the acquisition of word meaning". *Cognition* 2, 161–182.
- Dowker, Ann** (in press). "Polysemy and figurative language: Some developmental and cultural issues" [in:] Brigitte Nerlich, Vimala Herman, Zazie Todd & David D. Clarke, eds., *Polysemy: Patterns of Meaning in Mind and Language*. Amsterdam/Philadelphia: John Benjamins.
- Elster, Ernst** (1911). *Prinzipien der Literaturwissenschaft*. Zweiter Band: Stilistik. Halle a.d.S.: Max Niemeyer.
- Fauconnier, Gilles** (1998). "Mental spaces and conceptual integration" [in:] Michael Tomasello, ed., *The New Psychology of Language. Cognitive and Functional Approaches to Language Structure*. Mahaw, N.J. and London: Lawrence Erlbaum, 251–280.
- Fritz, Gerd** (1998). *Historische Semantik*. Stuttgart; Weimar: Metzler.
- Gardiner, (Sir) Alan Henderson** (1932/1951). *The Theory of Speech and Language* (Second edition). Oxford: Clarendon Press.
- Gibbs, Raymond** (1994). *The Poetics of Mind*. Cambridge: Cambridge University Press.
- Ingendahl, Werner** (1971). *Der metaphorische Prozess. Methodologie zu seiner Erforschung und Systematisierung*. Düsseldorf.
- Lakoff, George and Mark Johnson** (1999). *Philosophy in the Flesh: The Cognitive Unconscious and the Embodied Mind: How the Embodied Mind Creates Philosophy*. New York: Basic Books.

- Leary, David E.** (1990). "Psyche's muse: The role of metaphor in the history of psychology" [in:] David E. Leary, ed., *Metaphors in the History of Psychology*, Cambridge, etc.: Cambridge University Press, 1–78.
- Marks, Lawrence E.** and **Marc H. Bornstein** (1987). "Sensory similarities: Classes, characteristics, and cognitive consequences" [in:] Robert E. Haskell, ed., *Cognition and Symbolic Structures. The Psychology of Metaphorical Transformations*. Norwood, N.J.: Ablex, 49–65.
- Nelson, Katherine, L. Rescorla, J. Gruendel and H. Benedict** (1978). "Early lexicons: What do they mean?" *Child Development* 49, 960–968.
- Nerlich, Brigitte** (1989). "Elements for an integral theory of language change". *Journal of Literary Semantics* XVIII/3, 163–186.
- Nerlich, Brigitte** (1992). *Semantic Theories in Europe, 1830–1930. From Etymology to Contextuality*. Amsterdam/Philadelphia: John Benjamins.
- Nerlich, Brigitte** (1998). "La métaphore et la métonymie: Aux sources rhétoriques de la sémantique moderne". *Sémiotiques* 14 (special issue "Sens, figures, signaux. Quelques enjeux historiques de la sémantique, ed. by Christian Puech), 143–170.
- Nerlich, Brigitte and David D. Clarke** (2001). "Mind, meaning, and metaphor: The philosophy and psychology of metaphor in nineteenth-century Germany". *History of the Human Sciences*.
- Nerlich, Brigitte and David D. Clarke** (1988). "A dynamic model of semantic change". *Journal of Literary Semantics* XVII/2, 73–90.
- Nerlich, Brigitte and David D. Clarke** (1992a). "Outline of a model for semantic change" [in:] *Diachrony within Synchrony: Language History and Cognition*, ed. by Günter Kellermann & Michael D. Morrissey. Frankfurt am Main: Peter Lang, 125–144.
- Nerlich, Brigitte and David D. Clarke** (1992b). "Semantic change: Case studies based on traditional and cognitive semantics". *Journal of Literary Semantics* XXI/3, 204–225.
- Nerlich, Brigitte and David D. Clarke** (1997). "Polysemy: Patterns in meaning and patterns in history". *Historiographia Linguistica* 24(3), 359–385.
- Nerlich, Brigitte and David D. Clarke** (1999). "Synecdoche as a cognitive and communicative strategy" [in:] *Historical Semantics and Cognition*, ed. by Andreas Blank & Peter Koch. Berlin: Mouton de Gruyter, 197–214.
- Nerlich, Brigitte and David D. Clarke** (2000). "Blending the past and the present: Conceptual and linguistic integration, 1800–2000". *Logos and Language: Journal of General Linguistics and Language Theory* 1, 3–18.
- Nerlich, Brigitte and David D. Clarke** (2001). "Ambiguities we live by: Towards a pragmatics of polysemy". *Journal of Pragmatics*, 1–20.
- Nerlich, Brigitte and Pedro J. Chamizo Dominguez** (1999). "Cómo hacer cosas con palabras polisémicas: El uso de la ambigüedad en el lenguaje ordinario". *Contrastes. Revista Interdisciplinar de Filosofía* IV.
- Nerlich, Brigitte, Zazie Todd and David D. Clarke** (1998). "The function of polysemous jokes and riddles in lexical development". *Cahiers de Psychologie Cognitive. Current Psychology of Cognition*, 17:2, 343–366.
- Nerlich, Brigitte, Zazie Todd and David D. Clarke** (1999). "'Mummy, I like being a sandwich': Metonymy in Language-Acquisition" [in:] *Metonymy and Cognition*, ed. by Günter Radden and Klaus Panther, Amsterdam/Philadelphia: Benjamins.

- Nerlich, Brigitte, Zazie Todd and David D. Clarke** (in prep.) "How children learn to use and understand words with multiple meanings: The case of *get*". *International Cognitive Linguistics Association conference*, Stockholm, July 1999.
- Oakely, Todd V.** (1998). "Conceptual blending, narrative discourse, and rhetoric". *Cognitive Linguistics* 9(4), 321–360.
- Schmitz, H. Walter** (1985). „Die durchgängige Tropisierung der Sprache. Über einen Aspekt von 'Zeichen im Wandel'." *Historiographia Semioticae. Studien zur Rekonstruktion der Theorie und Geschichte der Semiotik*, hrsg. von Klaus D. Dutz & Peter Schmitter, 241–270. Münster: MAK S Publikationen.
- Schöffel, Georg** (1987). *Denken in Metaphern. Zur Logik sprachlicher Bilder*. Opladen.
- Schumacher, René** (1997). 'Metapher'. *Erfassen und Verstehen frischer Metaphern*. (Basler Studien zur deutschen Sprache und Literatur 75). Tübingen und Basel: A. Francke.
- Seto, Ken-ichi** (1999). "On distinguishing metonymy from synecdoche" [in:] K.-U Panther & G. Radden, eds., *Metonymy in Language and Cognition*. Amsterdam and Philadelphia: John Benjamins.
- Slobin, Dan I.** (1977). "Language change in childhood and in history" [in:] J. Macnamara, ed., *Language Learning and Thought*. New York: Academic Press.
- Smith, Michael K.** (1982). "Metaphor and mind", Review of George Lakoff and Mark Johnson, *Metaphors We Live By*, Chicago: University of Chicago Press, 1980. *American Speech* 57, 128–133.
- Stählin, Wilhelm** (1913). „Zur Psychologie und Statistik der Metaphern. Eine methodologische Untersuchung". *Archiv für die gesamte Psychologie* XXXI, 297–425.
- Turner, Mark** (1996). *The Literary Mind*. New York: Oxford University Press.
- Turner, Mark** (1999). Contribution to cogling list, 30 January, 1999 on 'History of cognitive linguistics': X-UIDL: 284bda4409504c43ad4da2924844ab36.
- Wegener, Philipp** (1885). *Untersuchungen über die Grundfragen des Sprachlebens*. Halle a.d.S.: Niemeyer. (New ed. Amsterdam/Philadelphia Benjamins, 1991).