

Chapter 8

Learning and Metaphor: Bridging the Gap Between the Familiar and the Unfamiliar

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Abstract In this chapter metaphors and related figures of speech are shown to be necessary and integral parts of sense making and learning. It is shown how this kind of speech has been studied in research in relation to children's understanding and learning. It is argued that different methodological approaches have led to different notions of children's abilities. Two recent studies on children and metaphorical speech in science-learning activities in preschool are introduced. One study investigated the nature and use of such speech and another study looked at a particular form of metaphorical speech, anthropomorphism. It is argued that metaphor is one way of establishing relations between different things without collapsing them into one and the same.

Keywords Meaning making • Metaphor • Methodology

8.1 Introduction

This chapter will focus more in-depth on a theme that we touch upon throughout chapters of this book – how learners and teachers in speech relate something novel and only partly known to something more familiar. After introducing the idea that metaphors and related figures of speech are necessary to, and integral parts of, sense making and learning, we will discuss how this kind of speech has been studied in research on children's understanding and learning. We argue that different methodological approaches have led to different notions of children's abilities. We then summarise two recent studies on children and metaphorical speech in science-learning activities in preschool, one study investigating the nature and use of such speech and another study looking at a particular form of metaphorical speech, anthropomorphism. Finally, some more overarching conclusions are drawn.

Metaphors and similes are central to verbal actions, relating the familiar to the novel, but there are also other forms of speech such as analogies that are used in this way. The empirical foundation for this chapter is Pramling's work on metaphor in early childhood science education, which is one of a limited amount of studies looking at this communicative feature with younger children. There is more research

into metaphor in science education with older students (e.g., Aubusson, Harrison, & Ritchie, 2006; Bishop & Anderson, 1990; Dagher & Boujaoude, 2005; Halldén, 1988; Pedersen, 1992; Tamir & Zohar, 1991). Only more recently has this empirical interest been investigated in early childhood education. How young children and their teachers use metaphors when learning about nature, that is, how they use what they already know to learn something new, without solely reducing the novel to the familiar, and thus not learning anything qualitatively new, but merely confirm what he or she already knows, are important questions to educational research. Metaphor is one way of establishing such relations between different things without collapsing them into one and the same.

A common strategy used when people – children as well as adults – try to make sense of, or communicate about, something unfamiliar is to speak about the novel in terms of the more familiar. We can analyze this communicative act though attending to the metaphors used and, more specifically, how they are used to ‘bridge the gap’ between the unfamiliar and the familiar. As Wertsch (1998) has emphasized, to appropriate a cultural tool often requires an extensive familiarization process; we do not simply take over in any straightforward manner, once and for all, a cultural tool. Rather, we become increasingly familiar with how to use a tool in relevant and flexible ways in various practices. The use of metaphor when starting to make sense of something unfamiliar in more familiar terms can provide insight into this process of appropriation. This process could be studied on a collective level of the formation of scientific knowledge (Keller, 1995, 2002; Ochs, Gonzales, & Jacoby, 1996; Pramling & Säljö, 2011) as well as on an individual level. The metaphorical nature of sense making and communication is particularly apparent when people encounter more abstract forms of knowledge, such as scientific knowledge. To give a few examples; a child facing the challenge of making sense of the ozone layer may speak about it in terms of a sheet (Cameron, 2003), while a geneticist explaining his or her field of expertise to a lay audience may talk about ‘code’, ‘letters’, and ‘translation’ (Knudsen, 2003; Pramling & Säljö, 2007).

8.2 Studying Metaphorical Speech and Changing Notions of Children’s Abilities

The interest in metaphor has a long tradition, going back to the writings of Aristotle in Greek Antiquity (Aristotle, version 1999, version 2000). For a long time, metaphor was considered a particular kind of speech for ornamental and/or rhetorical purposes (for historical accounts of metaphor, see e.g., Draaisma, 2000; Leary, 1990; Roediger, 1980). In more recent times, the interest in psychology, education, linguistics and other fields of study, was renewed with the influential book, *Metaphors we Live by*, written by George Lakoff and Mark Johnson. Since the publication of their book in 1980, many studies have shown how metaphors play important parts in human sense making and communication.

Simply put, using a metaphor means to speak about something, typically less familiar, in terms of something else, that it in a literal sense is not (Lakoff & Johnson, 1980). Phrased differently, we can say that metaphor is the process through which we use our primary tool for learning – language – in functional ways for speaking about and making sense of a changing world of experiences. If we look at metaphor in this way, then learning to speak metaphorically and understand such speech become important features of a child learning a language and learning about the world through language. In a recent account of children's development, developmental psychologist Stephen von Tetzchner (2005) argues that:

The role metaphor has in language makes the understanding and use of metaphors the most important developmental aspect of language in school-age children and adolescents. To understand a word in both a literal and a transferred sense is an ability that has just started to form at the age of 5-6 years and that appears to receive a burst in development during adolescence. (p. 345; our translation)

The importance for the language development of the child here ascribed to the use and understanding of metaphors is clear. Departing from this reasoning, there are important features of how we look at children's abilities that we would like to comment on. The first concerns what is implied as a relevant criterion of a child's abilities in this regard. Previous research into children's 'metaphoric abilities' (Knowles & Moon, 2006) has primarily been laboratory-based investigations when children are faced with the problem of explaining the rationale of metaphorical utterances presented by the experimenter. There has been much critique against such studies. This critique has mainly focused on two points. First, that the situation, where the child is presented with a-contextual utterances in an unfamiliar environment, is problematic (see also, Chap. 7); Second, what is taken as an indicator of the child's understanding may need to be reconsidered (Cameron, 2003; Pramling, 2006). It can be argued that taking the child's explanation of a metaphor as an indicator of her understanding conflates two different forms of knowing; a knowing in use and a meta-knowing. What is asked of the child is to provide meta-knowledge. In fact, it is often difficult even for adults to clarify the rationale of certain metaphors. This difficulty does not prevent people from using metaphors in functional and relevant ways in their everyday communication. On the basis of this reasoning, it is important to study children's metaphorical speech in everyday activities, when they engage with other children and/or teachers about, for example, natural phenomena.

In response to the critique raised against previous studies of children and metaphor, in the project from which the examples of this chapter come, everyday conversations between children and teacher and between children around natural phenomena were analyzed. Metaphor is therefore seen as language in use, rather than as a cognitive problem to be solved in the abstract. In the stated study, teacher-led activities in the domain of nature (science) have been documented with video. Themes about nature have been followed from initiation, over consecutive occasions to completion. In this chapter, we will use some of the transcribed excerpts to

illustrate our reasoning. The aim of the overarching project on children and metaphoric speech was to investigate the following issues: What kind of metaphors do children and teachers use during activities on natural phenomena (science) in early childhood education, and How are these metaphors used and do the participants indicate how they themselves understand these and how they intend others to understand these utterances?

8.3 Using Metaphorical Speech in Early Childhood Science Activities

Summarizing the findings of the empirical studies, it was found that:

1. Already in early childhood education, teachers as well as children use metaphoric (and other figurative) speech when speaking about natural phenomena. This has previously been seen in studies with older children learning science in school (Cameron, 2003; Jakobson & Wickman, 2007), but not with younger children.
2. There is a rich repertoire of figurative speech in these activities, including analogy, simile, and verbal and gestural metaphors, including animistic and anthropomorphic ones (see below).
3. Such speech appears as a multi-functional tool, that is, children and teachers do many different things with such utterances, such as describing the appearance of something observed and how it differs from something else, explaining and visualizing abstract phenomena and processes, explain other terms, and to mitigate potentially disturbing findings.
4. Some of these utterances are negotiated between teacher and children, but in other cases the conversation proceeds smoothly without the need for explicit clarification of terms (Pramling, 2010).

To just give a few brief examples (we will give more extensive empirical examples of metaphorical reasoning below and in Chaps. 9 and 10 in this book): When encountering a dead shell, this find is spoken about in terms of it being “flat as a pancake” (in a strict sense a simile, but this is not an important distinction to our present discussion). Another example is when they find a plaster in the soil, and speak about this in terms of “What do you imagine the soil thinks when a plaster turns up”? and “What do you think the worm thinks when he crawls onto an old plaster?” In the first case, something inanimate (soil) is spoken about as if it were animate and an intentional agent and in the second case the worm is made into a cognizant (male) being, concerned with a plaster (which could here be seen as a form of anthropomorphism). Through these utterances, the teacher engages the child in thinking about natural and biodegradation (and non-biodegradable) finds.

The prevalence of a particular form of metaphoric speech was observed, so called anthropomorphic speech, that is, speaking about the non-human world in human terms. The occurrence of such speech in children has long been known. It was pointed out already by Piaget (1923/1926, 1926/1951) as characteristic of children's thinking (and speech) as well as by Susan Carey (1985) in her work. Given the apparent prevalence of anthropomorphic speech in conversations about natural phenomena, Thulin and Pramling (2009) reanalyzed empirical data in the form of transcriptions of recordings of a prolonged theme-work in preschool on ecology (*Life in the tree stump*).

8.4 Giving Nature Human Form

Against the background of previous accounts of anthropomorphism as characteristic of children's thinking (Carey, 1985; Piaget, 1923/1926, 1925/1951), the following issues were investigated: Is there any pattern in the use of such speech; Is such speech introduced by children and/or teachers; and how is such speech responded to by the interlocutors (children and teachers)?

Summarizing the findings, it was observed that:

1. Anthropomorphic speech was primarily used to speak about animals (their conditions, appearance and behavior).
2. Of a total 128 anthropomorphic utterances, 24 were made by the children and 104 by the teachers.
3. At times, the children respond in line with such speech, as established by the teacher, but on other occasions even these children as young as 4–6 years, questioned the teacher using such speech (Thulin & Pramling, 2009).

The nature of anthropomorphic speech in the activities revolving around a tree-stump and what was found in and adjacent to it, can be illustrated with a few examples. One find was a shell. The following exchange between one of the teachers and a child (4 years, 9 months old) ensues:

Teacher: You mustn't touch it, because you'll frighten it Disa, won't you?
 Disa (4.9): It has to come out.
 Teacher: Yes, it has to, but then you must be careful. Maybe you can talk to it. (Thulin & Pramling, 2009, p. 143)

Suggesting that the child speak to the shell to make it come out, constitutes the animal as a communicable agent much like a human being, responding with an understanding of human speech. It is important not to ridicule the teacher or see her utterance as incorrect; through her speech she makes the child attend to something of great importance in learning about nature, to handle animals (and in extension, engage with nature) in a responsible and careful manner. An important socialization takes place through such conversations.

Another example of speaking about nature in human terms is the following exchange between a teacher and several children observing a woodlouse found in the tree-stump:

- Max (6.8): It's landed upside-down.
 Teacher: How many legs has a woodlouse actually?
 Isa (4.5): It's got all its side full.
 Teacher: Yes, try and count them Isa, you've got lots of them there.
 Isa: Ten.
 Teacher: Ten legs!
 Disa (4.9): Ye-es.
 Teacher: Imagine if we'd had ten legs, what would it have looked like?
 Lars (5.2): It wouldn't have looked – I've got two.
 Teacher: You've got two legs, yes. Imagine if we'd had ten legs, imagine needing shoes for all ten legs – feet.
 Disa: Hmm.
 Teacher: We need shoes when it gets colder, don't we? Wonder if woodlice need shoes?
 Carl (6.2): No.
 Teacher: What do they do to get warm, then?
 Carl: They put inside to get warm.
 Lars: Don't think so, I think they put their hands inside the shell.
 Teacher: Inside the shell?
- [---]
- Teacher: Do you know what we're talking about Disa? We're talking about if it gets cold for these woodlice, what do they do then? We put on our winter shoes, don't we?
 Carl: They go inside the stump.
 Lars: No, they go inside the shell.
 Teacher: Is it warm there then?
 Lars: I think they go inside the shell.
- Teacher (turning towards Lars)
- Lars: And warm themselves there.
 Teacher: And warm themselves there, like a quilt, you could say.
 Lars: Like a tortoise does.
 Disa: Snail.
 Teacher: Snail. (*ibid.*, p. 143f.)

During this conversation with the group of children, the teacher makes an initial analogy between the woodlouse and people (the children themselves). Through further prompting the children to consider the need to get shoes for the woodlouse's feet, the teacher directs the children's attention to the question of how these animals keep warm when it is cold. Hence, using human terms, the children are invited to use familiar experience and knowledge to start thinking about this issue. The teacher clearly marks out her own speech as non-literal, using terms such as "imagine", "like" and "you could say". The children come to engage in this thought experiment, suggesting additional examples, "tortoise" and "snail". In this way, human terms and experiences become resources in 'bridging

the gap' between something familiar and something less familiar that the teacher engages the children to start thinking about.

The study conducted by Thulin and Pramling (2009), as here briefly summarized and illustrated, gives a radically different image to the previous studies (see above) on children and anthropomorphism. Rather than placing such speech (or thinking) with children, this study primarily locates anthropomorphism with the teachers. It appears reasonable to conclude that children learn to speak in this manner much in the same way as they learn to speak in other terms and genres, by engaging with, and listening in to, others speaking in such a way. Anthropomorphism also appears as a mode of speaking rather than simply an expression of an underlying mode of thinking. Our images of children's capabilities is always 'theory-laden' (Hanson, 1958/1981); there is no neutral way of mapping someone's abilities (see Schoultz, Säljö, & Wyndhamn, 2001, for an elaboration of this discussion; see also this volume, Chap. 7, where we more in-depth discuss this issue). A reason for the contrary findings of Thulin and Pramling (2009) to previous studies is likely that how children were studied differed between these studies (cf. above). It is important to realize that anthropomorphic, and other forms of metaphoric, speech is used in different ways, some which makes possible 'bridging the gap' between what is familiar and what is less familiar; others making conversation stay in the human realm and not giving children access to new ways of conceptualizing nature. Speaking anthropomorphically (metaphorically) is not in itself prolific or limiting; it can be used in ways that develop as well as constrain children's understanding. The study reviewed in this chapter also illustrated the importance, when taking a cultural-historical point of view, of studying cultural tools in use (Wertsch, 1998), rather than as stand-alone objects. In the next chapter we build upon the dialectical relations between familiar and unfamiliar events, by exploring the concepts of simile and metaphor through examining the functional and culturally relevant ways they contribute to scientific thinking.

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