

# Asymmetries of knowledge between children and teachers on a New Zealand bush walk

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**ABSTRACT:** *This article presents the analysis of a single-case interaction between two preschool children aged four and their male early childhood teacher during a routine excursion to the New Zealand bush. The findings build on prior research that revealed whether or not child-initiated enquiries orienting to an environmental feature in the outdoor space provoked an affiliated interaction with the teacher, (Waters & Bateman, 2013). The current article suggests that, although early childhood education promotes a socio-cultural co-construction of knowledge, asymmetries of knowledge are often present in everyday practice. A call to investigate the interactional features of co-construction and scaffolding is recommended.*

## Teaching and learning in the outdoor environment

Outdoor spaces have long been associated with children's learning, offering opportunities for gross physical development in the early years (see e.g., Fjørtoft, 2004), fine motor skill development, positive attitudes to challenge, risk, enquiry, and problem solving, and social and emotional development, as well as high quality interactions with adults (Bilton, 2010; Tovey, 2007; Waters, under review). In New Zealand, the bicultural early childhood curriculum (Ministry of Education (MoE), 1996) suggests that 'daily routines should respond to individual circumstances and needs and should allow for frequent outdoor experiences' (p. 47) where 'both indoor and outdoor environments, including the neighbourhood, should be used

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as learning resources' (p. 83). Respect for the cultural and spiritual heritage of the land is upheld in the curriculum document and implemented by teachers during outdoor visits.

Research suggests that children can develop positive and appropriate attitudes to risk in their physical play in outdoor spaces that support 'risky play' (Sandseter, 2009), while the potential association with a healthy approach to risk in later life remains theoretical (Sandseter, 2011). Waller (2007) has identified how positive learning dispositions can be observed in children's playful engagement with the natural environment. However, there is evidence that simply *being outside* is not enough, and the manner in which teachers and children engage while they are outside impacts upon the resulting experience and associated learning (see Maynard & Waters, 2007; Valentine & McKendrick, 1997). Maynard (2007) highlights the *troubling* of teacher-child power relationships in outdoor spaces, and suggests that opportunities for the establishment of relationships that are different from those formed in the classroom may be resisted as a result.

Given the opportunity, children initiate physical activity when outside in imaginative play, active play, and exploration; they also initiate interactional activity, with each other and with adults (Waters & Maynard, 2010). The child-adult interactions afforded by young children's interest in the natural world offer the opportunity for sustained and shared thinking between teachers and children, which is directly related to children's enquiry-based interests (Waters, 2011; Waters & Bateman, 2013). It is this talking activity and orientation to aspects of the environment that produces social relationships (Bateman, 2011) and offers opportunities for sharing knowledge. In the co-construction of cognitive problems that may result from child-initiated interaction in the outdoor environment (Waters, 2011), an enquiry space (Wood, 2007) can be established in which teachers and children intersubjectively engage to find solutions.

### **Asymmetries of knowledge**

When discussing the concept of knowledge, this article aligns with the work of Melander and Sahlstrom (2009), who conceptualise 'learning, thinking and knowing as relational' (p.1535), where knowledge is demonstrated and co-constructed as a social process by the participants *in situ*. Literature investigating knowledge from this perspective is increasing, and can be traced back to the emergence of conversation analysis and recipient design in conversation turn-taking (Sacks, Schegloff, & Jefferson, 1974). Recipient design offers an explanation of how participants in an interaction shape their turns at talk to

accommodate the levels of knowledge of their recipients to maximise a shared understanding between the interlocutors (Heath, 1984; Sacks et al., 1974). This work towards achieving a shared understanding during interactions suggests that symmetry of knowledge between participants is the aim.

Heritage (2013) provides a concise overview of knowledge-in-interaction by offering details of studies into epistemics in conversation, demonstrating how participants manage knowledge-giving and knowledge-receiving in their turns at talk. Prior work by Heritage (2012a; 2012b) suggests that there are various levels or gradients of epistemic status where participants of a conversation tend to be either more knowledgeable (K+) or less knowledgeable (K-) about specific things. The more knowledgeable members may have had direct access to information from experiencing events in person, whereas less knowledgeable others may have their information from hearsay or guessing; a 'next best guess' (Heritage, 2012a, p. 6) can be asserted when a speaker assumes something to be fact. Although Heritage (2012a; 2012b; 2013) discusses gradients of knowledge, Sidnell (2012) suggests that knowledge is more of a 'multidimensional landscape' (p. 55) that is essentially more complex. Enfield (2011) argues that there can never be an equal K+/K+ or K-/K- relationship, suggesting that asymmetries of knowledge are prominent in everyday interactions between members. He also discusses the relationship between enchrony, status, knowledge, and agency within asymmetries of knowledge 'where enchrony entails accountability, status relativizes it, knowledge grounds it, and agency distributes it' (Enfield, 2011, p. 285).

Enfield (2011) discusses knowledge status and suggests that knowledge is tied to responsibility and affiliation between participants. He defines a person's knowledge status as 'a collection of his entitlements (or rights) and responsibilities (or duties) at a given moment, relative to the other members of his social group' (p. 291–292), suggesting that these 'entitlements (what we *may* do) and responsibilities (what we *must* do)' (p. 293) are category-bound to the member's social status. The link between entitlement and knowledge has also been discussed by Sacks (1992), who suggests that, when people such as 'lay persons' are not entitled to be knowledgeable about a certain situation, they express an opinion about that thing, because this offers a permissible way for a less knowledgeable person to continue talking.

## The research

### *Procedure*

The excerpt of the interaction presented and analysed here is taken from a research project investigating pedagogical intersubjectivity, which was initiated in order to reveal how shared understandings between teachers and children occurred during everyday interactions (Bateman, 2012). The research involved three teachers taking daily turns to wear a wireless Bluetooth microphone and be video recorded during three separate days throughout the year; ten hours of footage were collected in total. The interaction presented here occurred during a routine excursion to the natural outdoor environment, where eight children and two teachers visit a local bush track each week. During this event, the preschool teachers' interactions with the children were recorded for one hour and forty minutes. Once the recording was finished the teacher was asked to identify a moment when he perceived teaching and learning to have taken place; the identified episode was then transcribed and analysed using conversation analysis by the researcher. One minute and twenty-nine seconds of footage is presented in transcription form here, and Jeffersonian transcription conventions (Sacks et al., 1974) are used (see this issue's Transcription Key, p. 119).

### *A Defensive Trench*

The early childhood teacher (Tim) is walking along the bush pathway behind two four-year-old children, one girl (Sally) and one boy (Aata). While walking up the path, the children express an interest in an old Pa site (an old Māori defensive settlement), and so the teacher and children go to investigate the environmental feature further.

*Figure 1. Discovering a defensive trench*



## Extract 1

01. Tim: this is a ↓**defensive trench**↓  
02. Sally: look it has a **door** on it↓ (1.5) on the ↓si::de  
03. Aata: there ↓door=↑which ↓door

Tim initiates the interaction by referring to an aspect of the physical environment as he and the children approach it (line 01). International research investigating early childhood pedagogy presents dilemmas about child-initiated versus teacher-initiated interactions (Siraj-Blatchford & Sylva, 2004), where teachers' extensions of child-initiated activities are valued. The research also valued teachers 'inviting children to say what they thought in order to assess their [children's] levels of knowledge and understanding' (p. 725), indicating a teacher initiation of knowledge exploration. Possible asymmetries of knowledge could be present when a teacher initiates an interaction, as it could suggest that the teacher is telling the child 'I know it, you don't' (Enfield, 2011, p. 307) and 'news to an unknowing recipient' (Goodwin, 1979, p. 102). However, it is argued here in accordance with the fundamentals of conversation analysis that either person can make a noticing. It is the sequential response *in situ* to the noticing that will determine how the interaction will progress.

Initially, Sally adds some information about the environmental feature, demonstrating that she too has some knowledge to share (line 02). However, Aata indicates that he does not have access to the same information as he asks a question about its location (line 03). Each person's utterance in this initial section of the interaction indicates that there are various levels of knowledge presented by each member. Sacks (1992) suggests that people will use a name for a person whenever possible, as this indicates that the speaker has some knowledge of that person. It is suggested here that this is a similar situation, when naming a part of an environment. This would suggest that Tim is in a K+ position (Heritage, 2013). Aata, however, demonstrates that he has little knowledge of the environmental feature as, even when it is pointed out by Sally, he asks a question, suggesting a K- position in the current situation. Tim's opening of the interaction also makes him accountable for knowing about the thing that he introduced, where his status as teacher relativises his knowledge ownership and he uses his agency to share his knowledge (Enfield, 2011).

## Extract 2

04. Sally: look- look at that ((reaches for a piece of  
05. string running along the bridge))  
06. Tim: yea:h↓  
07. Aata: is there a- (0.6) what is **this** ↓for ((holds  
08. onto a piece of string running parallel to a  
09. bridge in front of them))  
10. Tim: this is for us to hold onto so we don't fall  
11. off (1.9) cos you wouldn't want to fall **down**  
12. there ↑would you↓ ((looks down into the trench))  
13. Sally: [↓no::↑]

Although Tim has drawn the children's attention to a specific feature of the environment to initiate the interaction (line 01), the children are seen here to focus on a different feature of the environment as Sally orients to a piece of string that runs along the left side of the bridge (see Figure 1), therefore talking the string into importance (Heritage, 1978). Tim offers a continuer (line 06), followed by Aata also orienting to the piece of string (lines 07–09). Although both Sally and Aata orient to the same piece of string, they do so in different ways. Sally invites others to also look at the feature, while Aata demonstrates his lack of knowledge about it. Although Aata does not directly ask the question of Tim, as he does not attach Tim's name to his question, Tim touches off the question in a recipient-designed turn as he provides an answer (line 10). This sequence of turns at talk reveals further asymmetries of knowledge as Aata presents himself as the less knowledgeable through his request for more information about the use of the string (line 07), and Tim as the more knowledgeable as he tells about its purpose (line 10). Although these exchanges could possibly categorise Tim as K+ and Aata as K-, they also demonstrate how Aata's line of enquiry is attended to by the teacher through Tim's display of reciprocity (Heath, 1984) in his corresponding next turn of talk. This exchange not only reveals the asymmetries of knowledge present (Enfield, 2011), but also demonstrates how Tim addresses these inequalities by being guided by the children's questions.

After a brief between-pause, Tim tags a reference to the defensive trench onto the end of his utterance as he mentions 'down there' and supports his verbal with a physical gesture as he looks down at the trench (line 11). Tim's initial noticing of a specific feature of the environment (line 01) is therefore extended here, making this a specific place of interest to Tim. Sally responds in a preferred way as she agrees with Tim (line 13).

### Extract 3

14. Aata: [what- ] what is **that** for- what is **that**↓  
15. Tim: that's the de↑fensive tr↑ench↓  
16. Aata: and what=do they ↑do::↓  
17. Tim: well it was dug out so you could get up here but  
18. only very slo:wly (0.6) so if some ↑enemies were  
19. coming (1.0) then they could **stop** the enemies (0.7)  
20. before they got up the **hill**: (0.7) and you could  
21. fight back  
22. (2.1)  
23. Aata: what's **enemie**:s↑  
24. Tim: mmm↓

This time, Tim's orientation to the defensive trench is touched off by one of the children as Aata asks a question about it (line 14), demonstrating his lack of knowledge about the specific environmental feature. Tim answers Aata's question with the same use of a name as he had on his initiation of the interaction (line 01), demonstrating once more that he has prior knowledge of the environmental feature as he uses a specific name (Sacks, 1992) for the site. Once a name has been given, Aata seeks more knowledge about what the defensive trench does (line 16). This question provokes Tim to further demonstrate his knowledge about the feature in his next turn at talk, as he offers specific knowledge of the environmental feature that describes its purpose (lines 17–21). There is a slight pause once Tim has finished citing his knowledge, followed by Aata responding to Tim's telling by orienting to the part of Tim's utterance where he speaks about enemies (lines 18 & 19). Aata seeks more knowledge about this specific aspect of the defensive trench as described by Tim, demonstrating his lack of knowledge, but Tim chooses to avoid an expanded response to the question by giving a minimal response token 'mmm', which works to close the interaction (Elliston, 2010) with Aata. As Tim does not offer any further knowledge to Aata about what an enemy is, it is difficult for the conversation to continue, as Tim has already established that the defensive trench is primarily about enemies (lines 17–21). The closing of the interaction between Aata and Tim becomes clearly visible as Aata walks ahead of Tim and moves towards a different group of people.

### Extract 4

25. Sally: why do we still ↓have it  
26. Tim: why do we still ha::ve  
27. Sally: the string:  
28. Tim: the string is here to show us where the path is  
29. Sally: °oh°  
30. (2.5)  
31. Tim: but=it's only **new**

32. (1.6)  
 33. Sally: who put ↑**this** here  
 34. Tim: the ↑string↑  
 35. Sally: °↓yeah↓°  
 36. Tim: **probably** the people in the Pukemokemoke bush  
 37. trust  
 38. Sally: maybe=it- maybe it <wa::s::> Tāne Mahuta  
 39. Tim: ↓may↑be (2.1) maybe it was ((names bush caretaker))  
 40. Sally: ↑who↑  
 41. (2.1)  
 42. Tim: he's the caretaker of the **bush** and he's going to do  
 43. some- we're going to ↓do↓ some <pla:nting> with him  
 44. (0.8) ↓sometime↑ (0.3) this ↑month hopefully↑  
 45. Sally: ( )=  
 46. Tim: =but I need to **email** him↓

Once Aata has moved away from Sally and Tim, Sally begins to ask a question about the environment (line 25), and Tim asks for clarification of what the 'it' is that Sally is referring to (line 26). This sequence demonstrates that Sally is now the more knowledgeable, as she is entitled to know about what it is she is enquiring about (Enfield, 2011). This marks a change in Tim being the more knowledgeable but demonstrates that asymmetries of knowledge are still present. Following an answer from Tim, which puts him in the position of being more knowledgeable again, Sally gives a change of state marker (line 29) and Tim offers a little further information (line 31), reinforcing his more knowledgeable position. Sally then goes on to ask another question (line 33), which also needs clarification from Tim (line 34). Although there is still asymmetry evident when Sally asks questions of Tim (lines 25, 33 & 40), Tim also shows his lack of knowledge in the production of the interaction where intersubjectivity fails and Tim has to ask for clarification from the more knowledgeable Sally (lines 26 & 34).

This next section of interaction between Sally and Tim (lines 36–39) is in contrast to the conversational structure in the prior interaction between Sally and Tim, and Tim and Aata, where the children demonstrated their lack of knowledge through initiating question-answer sequences. During lines 36–39 Sally and Tim appear to have more symmetry in their interaction as both members add their own knowledge to the situation, demonstrating what could possibly be observed as more of a K+/K+ or K-/K- positioning (Heritage, 2013), or perhaps a much more complex, multidimensional structure of knowledge (Sidnell, 2012). Within these exchanges, both Sally and Tim offer possible next-best guesses (Heritage, 2012a) regarding the people or person responsible for the placement of the string.



Tim begins the series of next-best guesses as he downgrades his knowledge, by starting his utterance with 'probably' and then goes on to identify a group of people (line 36). Sally responds to this with a similar turn shape as she, too, begins her utterance with a downgrade 'maybe' before suggesting that it could be T ne Mahuta (M ori god of the forest). Heritage (2013) suggests that 'taking an 'unknowing' epistemic stance...invites elaboration and projects the possibility of sequence expansion' (p. 378). This is evident in Sally's sequential turn-at-talk where she offers her own expansion of the sequence through her own next-best-guess. Sally's utterance could also be an expression of opinion (Sacks, 1992) as opinion is 'something which lay persons are entitled to have when they're not entitled to have knowledge' (p. 33).

Tim's response to Sally also takes the shape of an initial downgrade 'maybe' and also uses a specific name, as Sally did in her prior turn. The use of names here works to elevate the possible knowledge that each participant has about what they are talking about (Sacks, 1992). However, although Sally referred to 'someone' both parties had epistemic access to, evidenced in prior talk during the trip, Tim referred to a person whom Sally did not have prior knowledge of, evidenced in Sally's call for clarification in her next turn (line 40). In the same way as before (lines 01 & 17–21), Tim has referred to a name (line 39) and then has expressed his knowledge about that topic by giving further details (lines 42–44). This action, the use of a specific name and subsequent elaboration, widens the asymmetries to the original position between the participants again where Tim is the more knowledgeable and the children are less.

## **Discussion and conclusion**

The detailed analysis of this interaction demonstrates possible asymmetries of knowledge evident in the everyday practice of teaching and learning in a natural outdoor environment. Tim initiates this sequence as he attends to a specific feature of the environment, prompting possible asymmetries of knowledge where the teacher demonstrates his knowledge. However, the child-initiated line of enquiry is clearly followed through the majority of the interactions, where Tim responds to the children's questions (lines 06, 13, 15, 24, & 32) through a recipient design response, or not (lines 23–24). This finding aligns with current research, which indicates that children are more likely to raise enquiries about the world around them when outdoors than when inside a learning setting (Waters, 2011). This means that, when teachers share this space with children, they can

respond to the opportunities inherent in the children's questions. Early childhood research places value on children's questions, as it gives them 'authorship' over the conversation (Carr, 2011); the importance of affiliating with a child's enquiry is also documented as important in producing an interaction with the child through a shared interest (Waters & Bateman, 2013).

There are asymmetries of knowledge present in this interaction, as the teacher identifies a specific point in the environment (a defensive trench—line 01) and demonstrates that he has knowledge about the aspect of the environment he chooses to attend to (lines 16–20). A similar situation arises when the teacher introduces a person by name, the caretaker of the bush, into the conversation (line 38). From Sally's response (line 39) and Tim's description (lines 41–43), we see that this is someone Tim knows about and Sally does not, leading to another possible asymmetry of knowledge. However, such clear knowledge ownership is not always present in the interaction, as we can see in the last interaction between Sally and Tim (lines 36–39) that each member offers some possible knowledge, indicating that knowledge is possibly more multidimensional and complex (Sidnell, 2012).

With regard to teaching and learning, it is possible to see that the teacher has shared his knowledge with the children, and they now know something new. Even though the aim of a socio-cultural co-construction of knowledge in early childhood education indicates symmetry, it is questionable as to whether this is possible as one person is required to know more than the other in order to scaffold new learning.

## **Future directions**

This research could possibly inform early childhood teachers that a mobilisation of an interest in an environmental feature could initiate a sequence of teaching and learning, and that their display of reciprocity to a child's response can increase the opportunity for following the learner's interest. This is of particular importance in countries where early childhood teachers are required to notice, recognise, and respond to a child's focus of enquiry, such as in the New Zealand early childhood curriculum, *Te Whāriki* (MoE, 1996).

A second preliminary finding from this research, and which needs further investigation, is the possible differences in the conversational features of 'scaffolding' and 'co-construction' of knowledge between

interlocutors. Although this needs further exploration, scaffolding can be identified in the transcription presented in this article where there is a clear asymmetry of knowledge between the participants, observable when Tim offers names and elaborations (lines 01 & 17–21; 39 & 42–44), whereas co-construction could be observed between Tim and Sally, where both parties offer some knowledge towards an understanding of the situation, demonstrating more symmetry (lines 36–39). Further investigation into the symmetries and asymmetries in everyday teaching and learning is important because, although equity in the co-construction of knowledge is promoted (MoE, 1996), one person is required to be more knowledgeable than the other in order to scaffold learning.

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