Title: Learning to think as becoming dialogue: an ontologic-dialogic account of learning and teaching thinking in primary classrooms.

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Introduction

Teaching thinking has long been a goal of primary education. Attempts to teach thinking are influenced by the metaphor or model for thinking that is assumed. In this chapter I develop a dialogic account of thinking and of teaching and learning to think. This model is influenced by theory but also by classroom experience and research. I begin the chapter unpacking and interweaving three key concepts: dialogue, thinking and learning. Through this I develop the argument that learning to think can be understood as a shift in self-identification towards

becoming dialogue. I then apply this new way of understanding learning to think to the context of primary classrooms by analysing three short episodes of talk and interaction. Out of this theoretically informed analysis I claim that understanding learning to think as becoming dialogue offers valuable insights that have the potential to improve the practice of teaching thinking.

What is a dialogue?

When we think of dialogues we probably think of empirical dialogues that occur at a certain place and time between particular people. In doing this we are looking at dialogues as if from the outside. However, one important defining feature of a dialogue is a feature that we can only experience from the inside, through being part of a dialogue. This is the presence of the other on the inside of the formation of my utterances even before I open my mouth to speak. If my son Danny and I are playing with Lego and he shows me a Roman catapult he has made and I say: 'That is pretty cool, but I think it needs something: let's try putting a bar here to stop the arm going too far.' You might think it is obvious that my utterance starts with me saying, 'That is pretty cool,' but even as I framed that utterance Danny was there on the inside because I was speaking to him. The words 'That is pretty cool' came quite naturally but I would not say that if my boss, the Vice-Chancellor of Exeter University, showed me his latest report on how the university is going to reach its research targets. In other words I naturally use Danny's vocabulary and style because I am responding to him. In any dialogue the person you are speaking to, the 'addressee', is always already there at the beginning of the utterance just as you are there already on their inside when they frame their reply to you. In any dialogue we do not just address ourselves to the other person but to our image of them, which includes our idea of how they are likely to respond to what we are saying (Rommetveit, 1992).

For each participant in a dialogue the 'other' is an outside perspective that already includes them within it just as they already include this other, or at least an image or reflection of this other, inside their own boundary. The boundary between subjects cannot therefore be seen as an external demarcation line as it would be from the external point of view. Insofar as this gap between people in a dialogue is a boundary it is an 'inclusive boundary' which is not a

line so much as a 'space' within which self and other can mutually construct and re-construct each other.

Volosinov, Bakhtin's close collaborator in the 1920's, famously wrote that "meaning is like an electric spark that occurs only when two different terminals are hooked together", and further that: "In essence meaning belongs to a word in its position between speakers; that is, meaning is realised only in the process of active, responsive, understanding." (Volosinov, 1986 p102). Bakhtin repeats this same point even more simply when he writes that meaning does not exist in a vacuum but is always a response to a question (Bakhtin, 1986, 168). These meanings that arise within relationships as answers to questions include every kind of thing or identity including 'self' and 'other'. Understanding the everyday phenomenon of dialogue therefore pushes us towards an unusual way of thinking: a way of thinking that takes difference seriously. It is more normal to think in terms of identity and assume an already constructed world in which differences are negatively defined as the difference between existing things. Dialogic implies a re-thinking of the significance of difference, especially the difference between two voices in dialogue, as a creative force at the origin of every type of identity.

Dialogic space, the idea of a space of multiple voices and possibilities that opens up out of the dialogic gap of difference between participants in a dialogue, is a transcendental idea. This simply means, following the logic of Kant's transcendental arguments, that dialogic space is not a visible or measurable thing in the world but it is something that needs to be assumed in order to understand the experience that we have of dialogue. However, dialogic space is not the sort of transcendental realm of ideas that Plato posited nor the unknowable transcendental realm divorced from the empirically real world that Kant posited. Rather this is a situated or immanent transcendence, the kind of underpinning structure that Merleau-Ponty referred to as 'the invisible of this world' (Merleau-Ponty, 1968, p 151). Dialogic space is situated in that it opens up in dialogues between particular people in specific locations under certain conditions. Much of the contents of any dialogue can be predicted by this context. On the other hand every real dialogue is not completely predictable because it

has an aspect that transcends the immediate situation in the direction of creative possibility. I will say more about this in the next section where I consider the nature of thinking.

What is thinking?

Heidegger, in 'Was heisst Denken?', an essay sometimes translated as 'What calls thinking?', begins with the claim: 'We come to know what it means to think when we ourselves are thinking. If our attempt is to be successful, we must be ready to learn thinking.' (Heidegger, 1978, p369) Thinking has to be learnt, he writes, but the first step in learning thinking must be to unlearn all the nonsense that has been taught about thinking. He writes, for example, that 'Science is not thinking'. He means here that algorithmic accounts of thinking (and of science) as facts, linked by logical arguments or as the application of a defined method are at best accounts of thinking made up after the event that tell us nothing about what thinking is really like. So what is thinking really like? Heiddegger does not answer this question directly but he replaces it with another question: 'What calls us to think?' (Heidegger, 1978, p390). By doing this he is pointing out that while cognitive science has tended to describe thinking as if it was a process that we can control, like applying a tool to solve a problem, the actual experience is much more like being called to think by something beyond us. He writes, rather obviously perhaps, that what most calls us to think is that which we find most thought provoking. While we can never fully grasp hold of that which calls us to think, the very fact that we allow ourselves to be called by it means that our thinking becomes a kind of pointing towards it.

Levinas accepted Heidegger's claim that we are called out to think by something beyond us but this 'something' is not, he claimed, a mysterious abstraction like 'Being', as Heiddeger had implied. Thinking begins, Levinas claims, when we are called to explain ourselves in the face of real other people. From the very beginning, to be a self, for Levinas, is to be a kind of response to others who call us out: they call 'Are you there?' and the self says: 'Here I am' (Le mot *Je* signifie *me voici*, répondant de tout et de tous. Levinas, 1978, p180) It is in the context of a relationship of responsibility (a need to respond) binding us to other people that we are first called to think, in order to justify and explain ourselves to others.

Although Levinas writes a lot about concrete real other people, by implication his account of thinking is not really all that different from Heidegger's original account. He writes that there

is something about other people that we can never grasp, their 'Infinite otherness' from us, and it is this mysterious and ungraspable otherness of the other that is what most calls out to us. Levinas invokes this 'Infinite other' in an ethical context but it can also be seen as an account of how we learn to think. The description of thinking as a kind of response to the call of Being for Heidegger become thinking as a response to the call of Infinite otherness.

Some might say that Levinas's idea of the Infinite other seems just as vague and mystical as Heidegger's concept of Being. But actually I think that it is, as Levinas claimed, quite a concrete and straightforward idea. It is simply another way of saying that I am in a relationship with you but any idea I form of you does not fully grasp you because you are more than my images of you. In a larger context cognition in general always occurs in the context of a prior relationship with otherness in general that cognition cannot therefore completely comprehend.

Heidegger's and Levinas's accounts of thinking can be called dialogic not because they locate all thinking in real dialogues between specific individuals but because they assume that thinking is not some sort of unity or monologic but a kind of flow stimulated by difference. Real thinking, these two philosophers are saying, is not at all like the story that has been told by cognitive scientists, it is not at all like playing a reasoning game on one's own according to set rules, but as Volosinov and Bakhtin claimed, it is like a flow of sparks arcing out between poles of difference illuminating an infinite context of possible meanings.

The vertical dimension of thinking

To understand the vertical dimension of thinking Bakhtin's notion of the 'witness' position or 'superaddressee' in every dialogue becomes relevant. In a dialogue we might start just trying to persuade the other person but in doing so we listen to our own arguments as if from an outside point of view. For example in analysing the talk of children in primary classrooms I often saw children change their minds in the face of questioning by other children not in fact because they tried to see the issue or problem from the point of view of the questioner but simply because they looked at it again as if afresh from the outside and realized that they had got it wrong. In this common move they are stepping back and looking again at their own utterances as if from the perspective of a witness.

Dialogues, for Bakhtin, are not only dialogues with physically defined and located 'others' because the words of others are never neutral but always carry with them an ideological charge depending on their provenance. In other words we do not talk only with physical individuals but with the cultural voices that individuals carry. For instance, if someone speaks of 'intelligent design' these innocent and positive sounding words locate the speaker within a movement that lends a particular spin or colour to their words. Beyond the repertoire of cultural and historical voices there is always also, for Bakhtin, the voice of the 'super-addressee', the projection of an ideal addressee which might be paraphrased in different times and places as 'God' or 'the scientific community' or 'the judgement of history' but is always a point of view that transcends the immediately given physical, social and historical context of a dialogue. The superaddressee is a real voice or perspective in all dialogues. However Bakhtin, distances himself from a 'spiritual' account of thinking which transcends its context, when he writes of the superaddressee:

> *The aforementioned third party is not any mystical or metaphysical being (although, given a certain understanding of the world, he can be expressed as such) – he is a constitutive aspect of the whole utterance, who, under deeper analysis, can be revealed in it. This follows from the nature of the word, which always wants to be heard, always seeks responsive understanding, and does not stop at immediate understanding but presses further and further (indefinitely). (Bakhtin, 1986, p126-7).*

It follows from Bakthin's account of the superaddresee that if you try to pin down this position in order to dialogue with it you will find that another superaddressee position is automatically generated. Bakhtin did not bring this out but with the benefit of reading Bakthing through Levinas we can see that the infinite regress implied by the idea of the superaddressee means that it leads to a more cognitive version of the infinite other.

The analysis of infinity in dialogues enables us to understand more clearly how children learn to reason. First they are called to explain themselves in dialogues with specific others. In the act of doing so they become drawn into a dialogue with a third position that every dialogue generates, the position of the super-addressee which can become blocked as a particular set of rules or criteria, those instantiated in a particular community of practice for example, or the children can be drawn further into relationship with the infinite other. While dialogue with specific others can be about persuasion and who gets to have the final answer and write it down on the answer sheet, dialogue with the infinite other is about truth.

Being in relationship with the infinite other is never static because, of course, the infinite other is not some kind of thing but more like a constant call to go beyond one's prejudices and assumptions in order to see oneself as if from the outside. Another way of putting this is that entering into relationship with the infinite other is the same thing as acquiring a passion for truth and for justice.

What is learning?

Lave and Wenger's situated account of learning as joining and becoming more central in a community of practice has been influential (Lave and Wenger, 1991). In relation to thinking it is misguided in so far as it implies that thinking is always limited by the criteria of good thinking found within communities (Lave and Wenger, 1991, 98). This is an ethically dangerous idea that is disproved every time we are challenged to think by a voice outside of our community. However there is one interesting implication of situated learning theory that I would like to borrow and build upon to understand dialogic education better, this is that learning should be understood as a trajectory of identity within a social context (Wenger 1999 p153). It has long been clear that learning anything significant changes who we are and how we make sense of the world around us. This idea is found, for example, in Piaget's notion of accommodation. However whereas Piaget's and even Vygotsky's ideas of learning as the development of the self are abstract, Lave and Wenger situate this in a cultural context as becoming a self in a society.

One problem with this learning as participation in social practices model however is that it is all horizontal and lacks an adequate account of vertical learning. Learning as a trajectory of identity on Wenger's model can account for how one might learn to be a good citizen in a democratic society but it could equally account for how one might learn to be a good satanic gang member. It is about how we get socialised into different group norms: it does not account for how we might learn to become more aware of our identifications in order to question and transform group norms. As Biesta argues, to learn how to question and how to take effective ethical action it is not enough to learn how to join one group or another it is important also to learn how to join the community of those with nothing particular in common (Biesta, 2006). The space of dialogue between different communities is the space

'of nothing particular in common' from which it is possible to question all community norms. It is learning to identify with this interstitial space which can provide us with a new way of understanding the vertical dimension in learning or what it really means to learn how to think. This is not a return to the abstract vertical development espoused by Piaget and followed by Vygotsky. Piaget and Vygotsky, in their different ways, both posit overarching logical structures that thinking develops towards so that selves can become rational selves (Vygotsky p 199). In place of this positive vision of development into structure I would like to posit a negative development away from identity and towards identification with the openness and emptiness of becoming the space of dialogue itself.

Identity often refers to things that do not change much like being British or female or a teacher, but there is also a more shifting ground of identifications, like the way in which we might identify with being one kind of person at an office party and then shift to identify with being a different kind of person at a family funeral. Neil Mercer and I found that these kind of shifting identifications seemed crucial to understanding the different types of talk we found in small groups in classrooms. Disputational Talk, in which children try to defeat each other and be the winner, depends on an identification with a narrow and defended self-image where what is seen as 'self' is defined against others. This sort of identity can be found in the common phrases 'I win, you lose' or 'winner takes all'. People engaged in Disputational Talk are trying to beat each other, they are not trying to learn from each other. Cumulative Talk, by contrast, depends on all in the group identifying with the group identity more than with their individual identity. They do not want to challenge each other since that might disrupt the harmony of the group. In cumulative thinking there is no incentive to challenge ideas or explore reasoning, instead people seek to agree with each other to maintain the feeling of belonging to the group. We have videos of cumulative groups where different opinions were in fact expressed, almost by accident, but were then just ignored by everyone present in order to maintain the appearance of unity.

As well as cumulative and disputational talk we found a third kind of talk which Neil Mercer followed Douglas Barnes in calling Exploratory Talk. Exploratory Talk involves engaging critically with each others' ideas within a shared relationship. The definitions of this by

Barnes and then by Mercer invoke explicit reasoning. However a experimental study led by Sylvia Rojas-Drummond in Mexico shows that teaching exploratory talk leads to improvements in collaborative creative or divergent tasks without any explicit reasoning (Rojas-Drummond et al, 2006). Just as disputational talk and cummulative talk can best be defined by the type of identification they imply so can the intersubjective reality referred to by exploratory talk. I now prefer the term dialogic talk because the identification in this kind of talk is with the space of dialogue itself (Wegerif, 2010).

Identification with the 'space of dialogue' was an idea I put forward in 1998 to explain the trajectory of learning towards learning to think better. It was simply meant as an answer to the question: from what standpoint are children able to challenge their own thinking? How is it possible for them to change their minds because of what they hear in a discussion? If they are thinking then they are not simply identifying with their initial position or their self-interest, nor are they simply identifying with the other speakers position, although they may be listening carefully. If they are able to change their minds it must be because they are identifying in some way with the process of the dialogue itself and the ideal of truth which it generates. This account of how group thinking improved in our studies suggests a general direction in the development of more effective thinking away from identification with limited entities or images, and towards identification with the space of dialogue.

Becoming more 'open to the other' does not mean becoming the same as the other: in listening to you I do not lose my own perspective. Dialogic is about holding different perspectives together in tension and this tension leads as much to the challenge and competition between ideas which we call *critical* thinking as well as to the spontaneous generation of new ideas and insights which we call *creative* thinking.

Classroom illustrations of teaching and learning thinking

So far I have developed a theory of learning thinking through overlapping explorations of the concepts of dialogue, thinking and learning. In this section I will illustrate how this theory can help us understand what we observe in classrooms where children are learning to think. I

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will take three short illustrations from the context of mathematics in three different primary schools with different groups of children.

Seeing a pattern in a picture

I mentioned earlier the extensive empirical investigations I conducted with Neil Mercer into the efficacy of exploratory talk the experimental design used in a number of studies enabled us to compare successful talk in solving reasoning test problems with unsuccessful talk. Comparative analysis of the successful and the unsuccessful talk of the same group of children about the same problems helped to reveal what aspect of the dialogue really made a difference. Various illustrations and extracts of this analysis have been published in different articles and book chapters with the general argument that they show that language can be used more effectively as a tool for thinking. In the first extract of talk, Elaine, John and Danny are talking about a Raven's problem before our intervention promoting exploratory talk. They did not get it right. In the second extract, from the test given three months later after they had completed all of the lessons, they succeed in solving the same problem. The focus of my analysis is on why they succeed in solving the problem in the post-test condition when they failed in the pre-test condition.
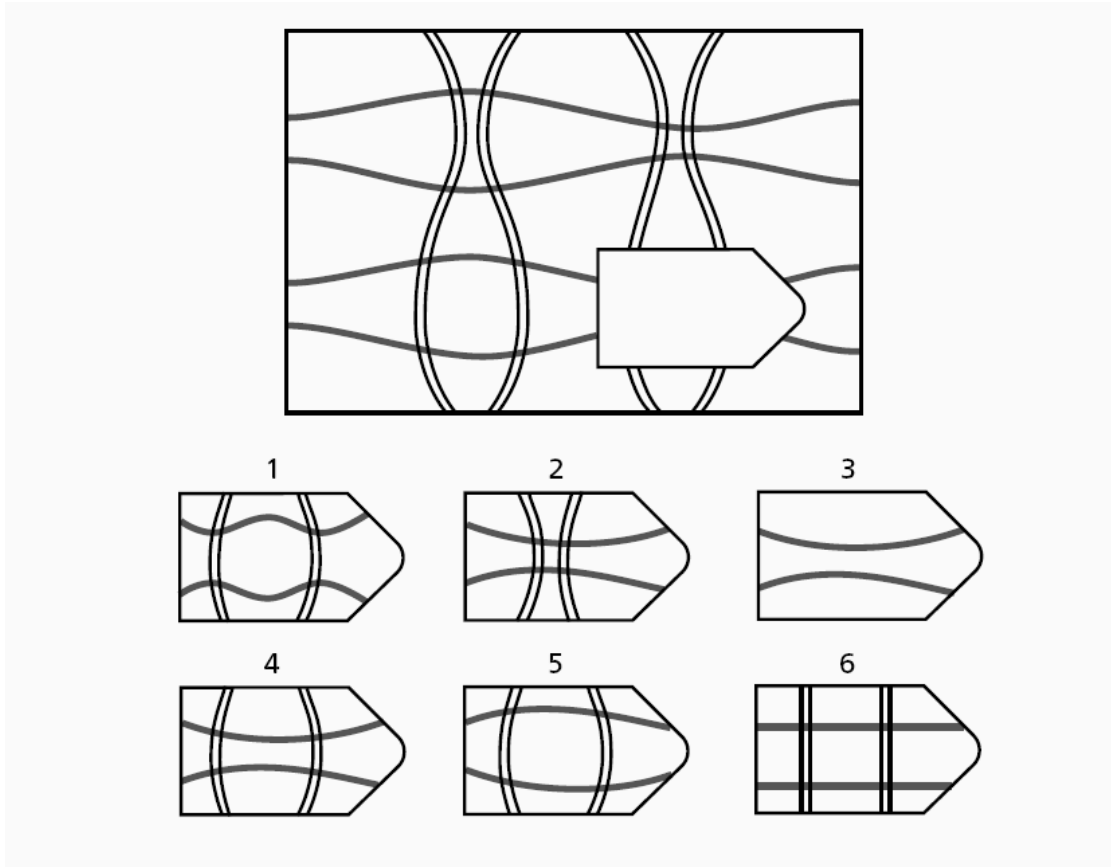

Example 1: Leap-frog

Figure 1. Problem A

Transcript extract 1: John, Elaine and Danny: Before talk lessons: Problem A.

Elaine: No, because it will come along like that (Elaine circles answer 5)

Transcript extract 2: John, Elaine and Danny: After talk lessons: Problem A.

 John: Number 5 Danny: I think it's number 2

John: No, it's out, that goes out look

Danny: Yeh but as it comes in it goes this

Elaine: Now we're talking about this bit so it can't be number 2 it's that one

Elaine: It's that one it's that one

Danny: Yeh 'cos look

Elaine: 4

Danny: I agree with 4 (John nods his assent and Elaine circles answer 4)

If you look just at the darker lines running vertically you might think that the answer is number five because that continues the pattern for these lines. This (false) conclusion is that which the children reached in their initial 'pre-test' attempt. Elaine did not pause to consider alternatives or to reach agreement with her group, but circled answer five. That she used the word 'because' reflects the fact that she was responding to someone else's suggestion, made through silent pointing at one of the pictures. In this pre-test condition there was little discussion. The children rushed through all the problems given without much talk. After the intervention programme consisting of a series of ten Talk Lessons (see Dawes, Mercer and Wegerif, 2000), the three children took more time over the problem. As before, it seems that the pattern of the dark lines is noticed and John offers number five as the answer. But this answer is only made as a suggestion. Danny puts forward number two as the answer, apparently because he is looking at the horizontal pattern of the lighter lines. John explains (through a combination of words and pointing) that the vertical black lines have to 'go out'. Danny in turn explains that it cannot be number five because the light lines have to 'go in'. Each of the two boys has adopted a different perspective; John takes the side of the dark lines, Danny that of the light lines. Each can see enough to refute the position of the other but this does not produce the solution. Elaine then comes up with the answer which combines the dark lines going out with the light lines going in, that is number four. Once she has expressed this both Danny and John can see that she is right.

The perspectives pointed to by John and Danny, almost certainly help Elaine to leapfrog to a synthetic vision that takes their two points of view into account in offering a third. 'Tools' such as pointing and using words are important here but the actual act of solving the puzzle is not verbal but a direct vision that occurs out of the tension created by the two different suggestions. This is not a mechanical solution but a creative leap.

Example 2: Commutativity

This next example has a very similar structure but it is more obviously applied to conceptual development in arithmentic. Mathematics education specialist Carol Murphy and I, with other colleagues at the University of Exeter, put together a project combining Exploratory Talk and mathematics to see if talking together would help young children shift up a level in their understanding of mathematics concepts. We are only halfway through the project but the results so far look promising.

One teacher we are working with, Susan, taught her class of 6 and 7-year-olds the ground rules for Exploratory Talk and then asked them to work together in groups of three solving a simple form of magical square. They were given the numbers 3, 2 and 1 on cards and asked to arrange them in a 3 by 3 grid so that every row and column added up to the same.

1	2	3
2	3	1
3	1	2

Figure 2 Magic square

In one group we video-recorded two of the group, Jack and Amy, worked industriously arranging numbers and counting them out while a girl called Judy just watched them.

'Two, three and one' Jack counted on his fingers, 'that's six'. 'One, three and two', Amy counted on her fingers, 'six'.

They were succeeding at the task, finding the way in which the numbers could be used to make all the rows and columns add up to the same total but they did not seem to realize that 3 + 2 + 1 was the same as 1 + 2 + 3 and the same as 2 + 1 + 3 etc. Judy sucked her finger looking on then said: 'They are all adding up to six, look they are all six'. She said it quite loud and they certainly heard her but they carried on counting them out numbers in rows and columns as if they had not really understood her point.

When Susan the teacher came around to this group she praised them for arranging the numbers correctly to form a magic square and emphasized the point that Judy had seen, that if you use only the three number cards '1', '2' and '3' then the answer is always 6 regardless of the order. She concluded by saying, 'So, there is no need to keep counting on your fingers, you know that they add up to six'.

This group had not been using all the talk ground rules but the collaboration itself seemed to spark an insight in Judy and prepared the ground for teaching the concept of commutitivity: that 1+2 is the same as 2+1 etc. It is interesting that out of the three children Judy was the one least involved in the procedure of the task but was the one looking on. There is an old saying 'Two is company, three's a crowd'. In groups of three two children will often happily support each other in doing the task as they see it while one is left out slightly. This knowledge that three is an awkward number often leads teachers to be resistant to the idea of grouping in threes. But the experience of the Thinking Together project shows that three is the best number for developing thinking. The child left feeling a bit spare in the group is often the one who challenges the others to think more about what they are doing.

Example 3: Invoking the absent addressee

Above we described how thinking is called forth by the superaddressee or witness. The crucial role that the absent addressee can play in precipitating a shift in understanding can be seen clearly in some data from an American primary classroom[i].

In the data a group of four children had been told to make a graph but had not been told how to make it. They had been growing plants as a class and had measured each plant's height each day. One of the children, Angelina, wanted to write down all the observation data in cells linked to each plant name. She had not really understood how a graph can help display information. Julia and Tom argued with her that they should map the height of the plants on one axis against the days on the other axis. They argued for a long time even turning the

graph paper around so that they could literally see it from each other's point of view. At one point in the video it is possible to see that Angelina changes her mind quite dramatically and concedes to the argument of the others. How does this happen? She precedes her change of mind by listening intently to Julia then turning her head away from Julia a little, as if for a moment of private thought, then she lifts her head slowly with a long drawn out 'Ohhh!' her eyes widen as her mouth opens into the 'O' shape which is at the same time a kind of smile.

Is it the argument that Julia has just given that enables her to see things so differently? Before Angelina's conversion, Will had just said:

'That's what you're telling them with the graph – that's why we're making the graph!'

And then Julia had added:

'We're saying: "It's day nineteen – how is it going?"'

As she said this she turned a little to the side and made an exaggerated welcoming gesture with her hand drawing in an imaginary viewer from outside to look at the graph.

There was something at stake for Angelina in not changing her mind as she had invested time in her arguments and she wanted to be right, yet she found herself led, almost despite herself, to see Julia's point of view. The quality of the relationships in the group is crucial to this achievement of unforced agreement. The ground rules operating in this group meant that challenges were responded to with reasons, not with a breakdown of communication, and that changes of mind were possible (although this was touch and go at times as they got quite angry with each other).

It seems that Angelina's change of mind here did not stem from any abstract logic so much as from a shift in perspective to see the graph from a projected future point of view – the point of view of the future viewer of the graph referred to and brought into the discussion by Julia and Will. This change of mind is preceded by the gesture of drawing in the alternative perspective, the future viewer.[iv]

A dialogic model of cognitive development

Vygotsky writes about how children's experiences lead to the formation of ideas that are fuzzy complexes, informed by words but still embedded in the contexts in which they are experienced. Full concepts, on the other hand, concepts like subtraction, are logical and live in the pre-existing language of the culture. If education works it is a kind of negotiation or dialogue between teachers and children in which their emergent ideas are grafted onto pre-existing concepts. Full concepts, Vygotsky writes, exist in relation to other concepts in a logical conceptual system where every term is defined by every other term.
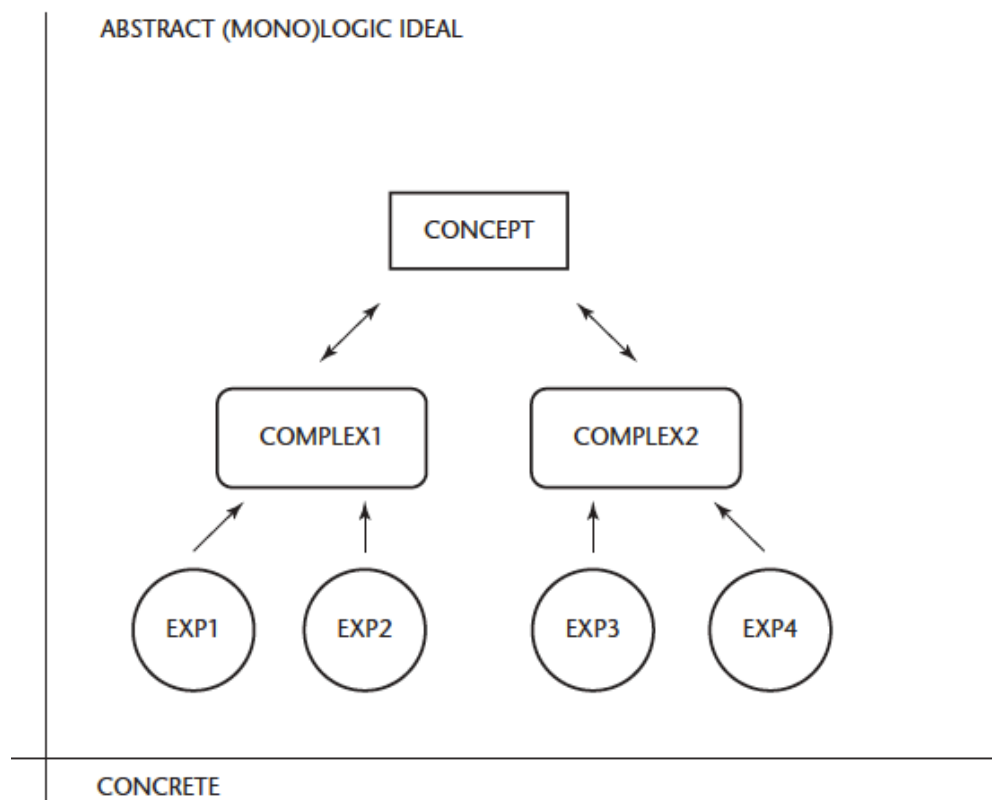

Figure 3: Vygotsky's model of cognitive development

This account is insightful in some ways but it suggests a one-way hierarchical progress in which the initial 'participatory' thinking of children is overcome and replaced by more abstract and logical thinking. The focus of this and similar accounts is on the development of explicit rationality. Creative thinking is harder to explain on this model. Although dialogue enters into this account it is just as a means to the achievement of a monological (single-

voiced) conceptual system. (Vygotsky, 1981: Wertsch, 1996)

An alternative more genuinely dialogic account of conceptual development would suggest that concepts do not replace experience. Thought always remains participatory and

metaphorical. Concepts are always fuzzy and they are always temporary provisional staging posts, like eddies in a stream, where experiences are brought together in dialogues. In fact concepts are not solid things at all but more like perspectives on reality achieved in a dialogue and then given a marker in language.
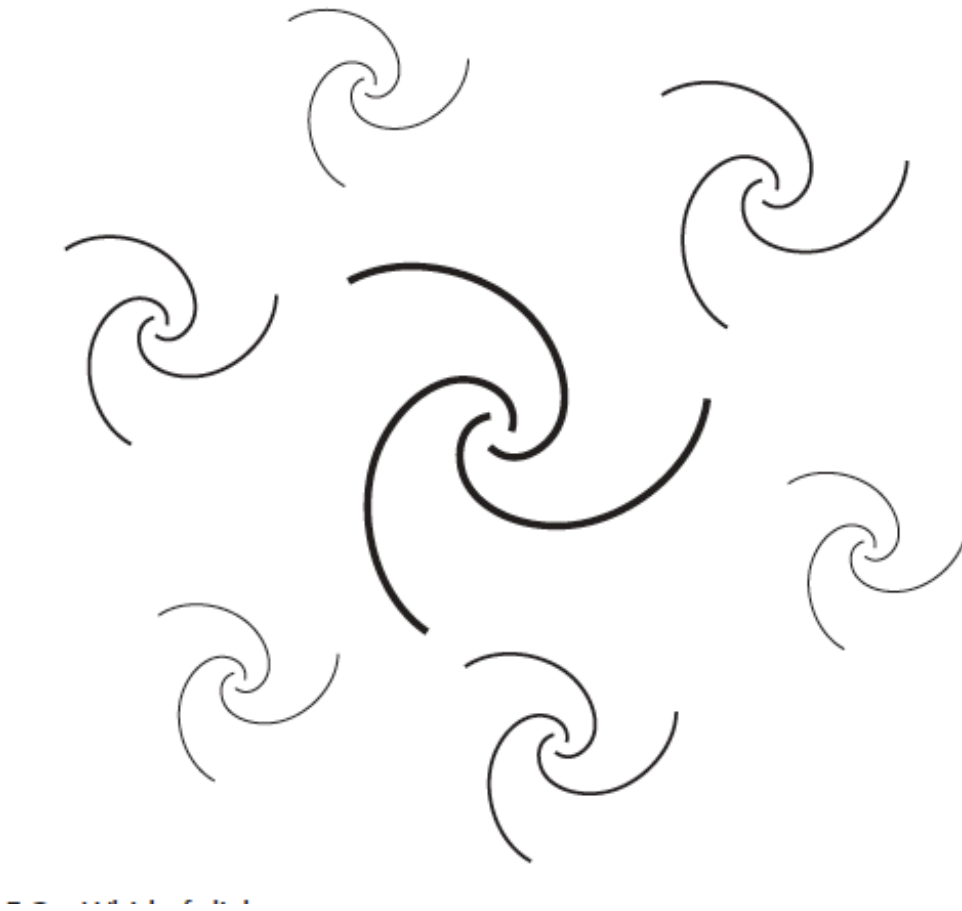
Figure 4: a dialogic model of cognitive development

Conceptual development is not about experience being drawn up into a pre-existing logical system but about experience being organized by seeing as if from the perspective of others and ultimately being capable of seeing everything as if from the perspective of the witness position that emerges within every dialogue. Since that witness can themselves be questioned generating a new witness this feature of dialogues is a source of an infinite potential for seeing things in new ways.

It might be argued that the concept of dialogic is not very useful because in fact everything is dialogic. The structure of consciousness itself is dialogic, it is seeing as if through others eyes. There is always more than one perspective or more than one voice in play and the whole of idea of monologic is an illusion. This is all true but if monologic, the ideal of there being only one true representation, is an illusion it is an influential illusion. In lived reality we experience a continuum between the more monologic voices and the more dialogic voices.

The sign that says 'no walking on the grass' is a more monologic kind of voice than a friend who explains to me that his grass needs time to grow and so asks me please not to walk on it today. The first is an outside voice of authority, the second a persuasive voice that enters into my world as if the words were my own words (Bakhtin, 1986). Similarly some people seem to be more monologic than others. Some shout their views and refuse to listen displaying an intersubjetive orientation that Mercer called 'disputational', in the contexts of studying group processes in primary classrooms (Mercer, 1995). Others may be more quiet but they agree with 'what everyone says' and ignore any challenges to this groupthink. Such people display the orientation the Mercer called cumulative, again in the context of groups talking together in primary classrooms (Mercer , 1995). These are two ways of not thinking because bloked by monologic identifications. In each case strong identification with a limited image, a self image in one case a group image in the other, prevents the openness to the question which is necessary for really thinking. Teaching thinking therefore means to draw learners away for over-identification with closed and limited visions and to open them up to questioning from other perspectives. Doing this is moving them on a scale from monologism towards dialogism: from identifying with a closed image towards identifying with the open space of dialogue itself.

Conclusions

The examples I gave of thinking breakthroughs in primary classrooms illustrated some intersubjective mechanisms for taking thought further. In the first two examples teaching ground rules that opened a space of reflection enabled children to step back from each others ideas and leapfrog them into a new insights that combined the ideas of others into a new vision. In the third example the children spontaneously invoked the perspective of the absent future addressee in order to make sense of what they were doing a prompt a breakthrough in understanding. Although each new vision can be partially reified into a concept, a concept such as 'cummutitivity' in the second example, in fact each new concept is also a kind of dialogue which brings different perspectives and different experience together dynamically to talk to each other. Cognitive development, which has often been described in monologic terms, can therefore be re-conceptualised in a more dialogic way as drawing isolated moments of experience up into larger dialogues. This is the development that Bakhtin wrote of when he implicitly talked of moving from the 'narrow time' of the here and now, towards that 'great time' in which every voice is in dialogue with every voice. At the same time this

model of teaching and learning thinking has useful implications for classroom practice. It suggests teaching children how to question each other and how to constantly invoke the voice of absent witness in order to help make sense of what they are doing and so grow in insight (Wegerif, 2010 gives many more practical illustrations of this approach to teaching thinking).

The idea of dialogic is not limited to dialogue with this or that image of a specific 'other' person but can lead us beyond the particular other person into dialogue with infinite otherness: that otherness that always outstrips us and that never allows us to say 'now I know the truth so I can stop thinking'. Teaching thinking is drawing learners through relationships into a state of being more at home in openness and multiplicity. Learning to think on this model can therefore be seen as a trajectory of identification from closed images towards an identification with the radical openness of dialogue itself. To learn to think is to become dialogue: to learn to think well is to become dialogue with the infinite other.

[1] The data was from the work of Richard Lehrer and Leona Schauble and this account

will appear in Tim Koschmann (ed.) (in press for 2010) *Theorizing Classroom Practice.*

New York: Springer, along with other interpretations of their data from a range of

educational researchers and theorists.

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