Angels, tooth fairies and ghosts: thinking creatively in an early years classroom

Book Chapter

Chapter 3

Thinking creatively in an early years classroom

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Introduction to the educational environment and local context of the study

This chapter offers an account of the creative thinking and collaboration that took place in a class of five year olds in an English primary school during the academic year 2004–05. In terms of its location and size, there was nothing particularly remarkable about the school. It was a medium-sized school of about 350 pupils that served a semi-rural town in the east of England. Its pupils were local and most lived in the 1930s housing estate within walking distance of the school. What was special about this school, however, was its commitment to developing itself as a creative learning community by participating in a creativity training programme more usually employed in an adult business context. Moreover, it was willing to subject itself to the scrutiny of a university research team: the head teacher and senior management team had agreed to take part in a year-long case study to evaluate the impact of the training programme on teaching and learning in the school. This school was in no way unusual in wanting to develop its capacity for creative teaching and learning, but at the time its intention to embed creative thinking skills across all curriculum subjects was fairly uncommon. This intent was, however, very much in tune with national and international developments in education where strenuous efforts were being made to extend the reach of creative education which had for a long time been more or less exclusively associated with the arts. A very brief outline of these developments is offered to set the research in context and to explain the educational climate in which the school was working.

Over the past ten years, educational researchers have devoted a huge expenditure of effort to understanding creative teaching and learning, (e.g. Jeffrey 2006; Craft 2005). In developed and developing nations around the globe, this effort has been driven in part by the view that in the twenty-first century education must meet the needs of societies where, according to economists and policy makers, knowledge generation, creativity and innovation are key to the success of economic systems. As Sawyer (2006: 42) points out, 'If the core of the knowledge society is creativity, then the key task for educators is to prepare learners to be capable of participating creatively in an innovation economy.' A similar sentiment is voiced in the 1999 version of the *National Curriculum Handbook for Primary Teachers in England*:

> By providing rich and varied contexts for pupils to acquire, develop and apply a broad range of knowledge, understanding and skills, the curriculum should enable pupils to think creatively and critically, to solve problems and to make a difference for the better. It should give them the opportunity to become creative, innovative, enterprising and capable of leadership to equip them for their future lives as workers and citizens.
>
> (QCA 1999: 11)

In the United Kingdom, in response to this economic and cultural Zeitgeist, various influential reports and discussion papers on creativity and education were commissioned by government departments in the late 1990s and early years of the twenty-first century. The first of these, *All our Futures: Creativity culture and education* (NACCCE 1999), was commissioned jointly by the former Department for Education and Employment and the Department for Culture, Media and Sport. This was followed in 2000 by *Unlocking Creativity: A strategy for development* (DCAL et al. 2000), commissioned by Northern Ireland's Department of Culture, Arts and Leisure, and in 2001, *Creativity in Education* and *Creativity in Education – Case studies* (Learning and Teaching Scotland/IDES Network 2001a, 200ab). In turn, these reports gave rise to various curriculum development projects such as *Creativity: Find it, promote it* (QCA 2005) in England, and *Creativity Counts – Portraits of practice* (Learning and Teaching Scotland/IDES Network 2004). Similar

curriculum development projects were initiated in Northern Ireland and Wales (SEED 2006).

Of these projects, in England the Creative Partnerships programme has been one of the most successful (Kendall et al. 2008; OfSTED 2006). This programme was set up in 2002 under the aegis of Arts Council England to serve schools and youth organisations in some of the most disadvantaged areas in England. The programme assists schools to build sustainable relationships with creative professionals from fields such as the arts, cultural and media organisations, architecture and creative design industries. It does this through local delivery networks which assist with the establishment of working relationships between schools, creative professionals and organizations. Although Creative Partnerships came under the umbrella of a new organisation, Creativity, Culture and Education (CCE) in 2009, its core mission remains that of raising children's and young people's aspirations and helping them to develop the skills needed to perform well in the workplace and wider society (CCE 2010). The fundamental premises that inform the nature of the partnerships between educational practitioners, schools and creative professionals are that:

> Teaching is fundamentally a creative profession and that teachers are well accustomed to finding creative solutions to complex challenges. By pairing the complementary skills of creative practitioners and teachers, Creative Partnerships helps liberate the creativity of everyone involved, so that fresh and engaging approaches to teaching and learning are developed through collaboration.
>
> (Creative Partnerships 2010)

The school where we carried out the research described in this chapter was a Creative Partnerships school. It was selected for a case study and second phase of an evaluation of a project called EXCITE! (Excellence, Creativity and Innovation in Teaching and Education). The evaluation was carried out by a team of researchers from the Open University and was framed by the government policy initiatives detailed above. The former Department for Education and Skills and Esmée Fairburn Foundation funded the project and the evaluation. At the time there was considerable interest in the question of whether creativity training programmes developed for business and industry could be adapted to develop creativity in schools (e.g. Fryer 2003). The EXCITE! project was designed to deliver a well-established, creativity-training programme, 'Synectics', to teachers from four English local education authorities. The training was delivered by 'creative facilitators' from Synectics Education Initiative (SEI),[1] an independent educational charity. These facilitators use experiential learning together with established tools and communication strategies to stimulate creative thinking and problem solving. One of the strengths of the SEI programme is that in addition to offering training in creative thinking techniques, it offers structures for collaborative group work. As genuine collaboration between pupils can be difficult to achieve during classroom group work sessions (Comber et al. 1999), this meant that the programme had additional potential benefits for teachers. The programme was modified for schools and colleges. The first phase of the Open University study investigated the impact of this modified programme on teachers' professional practice to determine whether it transferred successfully into the education sector.

Through its involvement with Creative Partnerships the primary school where the second phase of the Open University study took place was firmly committed to the view that teaching is a creative profession and that learning ought to be enjoyable. One of its teachers had participated in the initial phase of EXCITE! This teacher persuaded the head to bid for additional Creative Partnerships funding to secure the services of Mathilda Joubert, a creative facilitator from SEI to work with the school.[2] 'Synectics' training sessions for the school's governors and all teaching and support staff took place at the end of the summer term (two days) and just before the start of the autumn term (two days). In consultation with the head teacher, Mathilda tailored the training to the school's needs, and continued to support the school throughout the year. She also contributed to the research study.

The format and content of the creativity training over the first two days covered three themed areas: creative climates, creative thinking tools and creative process strategies.

On the first day, participants explored the current context, national educational climate and challenges to teaching for creativity, the language for creativity and were introduced to Synectics tools for creative thinking. The second day was devoted to problem solving, and covered the Synectics Problem

Solving Diamond, creative excursions, planning input, backward/forward planning, best current thinking and agenda meetings. Working in small groups, members of staff from the school learned how to facilitate creative problem-solving sessions by working on real-life problems. They used video-based feedback to analyse their own performance. The training emphasised teamwork and strategies for creative collaboration.

The second two days of training took place immediately before the start of the autumn school term, and focused on developing innovative ways of working and remodelling the curriculum. These sessions allowed members of staff to practise using Synectics creative thinking tools and process strategies. The problems they worked on were 'How to teach for understanding', 'How to develop a secure and positive emotional climate for learning' and 'How to encourage creative learning and teaching for everyone'. The overarching goal for these two days was a workable action plan for curriculum change.

Two of the main aims of the research study were to examine the impact of this training on teaching and learning. We used questionnaires and semi-structured interviews with teachers and support staff to evaluate the impact of the programme on their teaching. To evaluate its impact on learning, we filmed the lessons and activities taking place in three classrooms at various points during the school year. This chapter draws on transcriptions of video observations of two lessons given by Sally, a year 1 teacher, and on her reflections on these lessons. A full account of the training programme, the research methodology and main findings of the EXCITE! evaluations are given in the main reports (details of how to access these are given at the end of the chapter).[3] Further details about Synectics tools can be found in Cesarani (2003) and Fryer (2003).

The next two sections discuss how Sally introduced some of the Synectics tools and techniques into her teaching. The first section draws on an extract from the transcript of a literacy lesson that was ostensibly about how to formulate different kinds of question. This lesson took place towards the middle of the autumn term. The following section uses extracts from a literacy lesson that took place during the spring term. As well as Sally's own reflections on these lessons, the chapter offers an interpretation informed by socio-cultural accounts of collaborative creativity (e.g. Moran and John-Steiner 2003; Sawyer 2003). It also draws on cognitive developmental explanations of how children construct intuitive and highly creative theories, stories and narratives to understand the world (e.g. Engel 2005; Gelman and Gottfried 2006).

Angels, tooth fairies and ghosts: creative excursions in year 1

One of the founders of Synectics, George M. Prince describes the relationship between creative thinking and learning as follows:

> Underlying learning is the process of *thinking*. We go through the process of thinking to *create* meaning. We create meaning by making a connection between the new information and what we already know, so that the new information 'makes sense'. … This description of the process of thinking to learn sounds surprisingly like that of 'creative thinking' to produce new ideas, concepts, products, etc. New ideas are the result of making connections between material that has not previously been connected. … Learning and creativity are both, basically, the ability to make connections to create meaning or significance.
>
> (Prince and Logan 2005: 155)

He went on to say that instead of telling children they are wrong when they make novel, if unconventional connections:

> If we are respectful enough of all of a child's trial connection making, the chances are he will be a daring connection-maker. … He will also be a very good learner.
>
> (Prince and Logan 2005: 158)

This section discusses how Sally used elements of her Synectics training to encourage her class of five and six year olds to make connections, and in doing so, revealed some of their intuitive theories about death and

the supernatural. Encouraging people to generate novel and unusual connections using metaphor, analogy and visual imagery is key to a process Synectics trainers call 'excursion'. This process allows people to take a mental break from the problem they are working on to generate seemingly irrelevant ideas that they later connect back to the original problem or task. The excursion process allows people to generate alternative perspectives and new ways of thinking about a problem. In a classroom context, excursions can include drawing, story-telling, taking a walk, making collages, generating metaphors, analogies, paradoxes or anything the teacher decides to introduce.

On our first visit to the school in November, 2004 we filmed a 'philosophy' lesson with Sally's class of five and six year olds. In this lesson, Sally wanted to use excursion with the class. She also drew on her training in the use of a programme called Philosophy for Children (P4C) to structure the initial part of the lesson. Matthew Lipman (2003) developed P4C, a language-based programme, as a way of using dialogue and shared inquiry to develop children's deductive reasoning and critical thinking skills. Lipman's programme draws on the writings of Dewey (1910/1991) and Vygotsky (1978), who both emphasized the role of education in the teaching of thinking. Accordingly, teachers who use this programme are trained in discussion techniques that encourage disciplined practice in critical thinking. In a P4C 'community of inquiry', children are encouraged to discuss moral and ethical issues, usually presented through imaginative fiction. Lipman's paradigm emphasizes the importance of creative and moral thinking as well as critical thinking. Typically, these discussion sessions involve the whole class and their teacher sitting in a circle so that they can speak face-to-face with one another.

<break line here>

In both Synectics and P4C, the teacher adopts a facilitator role rather than a didactic role. As Synectics was originally developed in a business context, the role of the facilitator is related to how a team conducts a meeting. It includes making notes and keeping track of ideas and contributions from team members; making sure people's suggestions are listened to and developed before they are evaluated, introducing specific techniques such as excursions when appropriate, and generally making sure that team members understand what kind of contribution is required at each stage of the meeting. Sally employed all of these strategies with her class, and was careful to make sure that no one's contributions were overlooked, that ideas – however improbable – were accepted, and that children were given plenty of time to think. A central tenet of the Synectics philosophy is that all ideas are potentially valuable and should be accepted at least initially, and that no idea should be rejected until it has been given a fair hearing. This practice is designed to establish a positive emotional climate that is supportive of creativity.

With the children sitting on the floor in a big circle, Sally started off the lesson with a 'game' that encouraged children to formulate and progressively refine a philosophical question:

> We're going to play a game, just to start off with, with questions. It's a game that I haven't ever played before but it's just an idea I had last night. Um, and what we need to is we need to start with a question. And it's like the um, stand up sit down, but instead we'll go round in a circle. And we're going to see how we can change a question. OK, so we're going to see how we can change it and what difference it makes to what the question means.

Thinking back to an earlier history lesson about Guy Fawkes,[4] one boy volunteered the first question: 'Why did he want to kill the whole world?' Another boy immediately jumped in with, 'But how do we know who he is?' and went on to explain, 'Yeah, cos how do we know, if you don't put "Guy Fawkes" instead of "he", cos how do you know who you mean?' Going round the circle, the children then took turns at making connections and changing words in the question to make its meaning clearer. Anyone who felt that they were not ready to contribute said 'Pass'. After about five minutes of intense discussion, the original question had been transformed into 'Why did Guy Fawkes want to blow up the king and the Houses of Parliament?' Each time a child suggested a change to the wording; Sally encouraged them to give a reason for their suggestion and also asked the other children whether they agreed to it. Once agreement had been reached she recorded the new question on a large sheet of paper so that children could see as well as listen to how its wording had changed. When she watched the video of the lesson later she commented:

> I think the uncovering what the question was really about relates to the Synectics training as well [as P4C] because it's really important, the Synectics training says it's really important … to have a clear understanding of what questions actually mean. I think getting children to stop and look at questions, and really understand what it means and make those connections around them; I think that really makes the kind of creativity that Synectics is all about.

Next, Sally introduced two excursions. The first excursion was a 'connections game' that she had invented. The children had played the game before, and enjoyed it as it involved a lot of activity and excitement. Sally reminded them of the rules by acting them out and modelling what the children were expected to do:

> I'm going to walk round the circle and we need to make the circle quite small, 'cos I'm going to walk round. I'm going to keep thinking of something connected with 'Parliament'. So we go round [walks round, touching children on head saying 'Parliament', when she reaches Josh, she says] 'King', now Josh is going to try and catch me. [Sally runs round the circle trying to beat Josh back to his space in the circle]. Josh, would you like to start at Joseph with 'King'. When you think of something that connects with 'King' then you need to try and steal their place.

During the course of this game the chain of connections made by the children was 'king', 'government', 'queen',' princess', 'prince' and finally, back to 'government', at which point the game ended. After another excursion where children had to indicate whether they agreed or disagreed with a particular statement by moving to different areas of the room, they were ready for some more discussion. In this part of the lesson, Sally wanted to help her class to develop their dialogue skills. With the children again sitting in a circle, She started off by reminding them what dialogue means:

> [Last week] you were practising some skills, which are called dialogue skills and dialogue is about talking about your ideas. And you chose last week to do that for your homework, practise those things with mums and dads. So you must be quite good at that now, now you've had a practice so we could use those things that you were doing with mums and dads to talk about this question here that you've just changed.

The dialogue reported in Extract 1 took place towards the end of the lesson. It is worth reproducing in full as it shows in some detail how Sally skilfully used a series of open questions to draw out extended contributions from the children. For example in line 1 she asks 'What was your idea?' and in line 14 she asks 'Can you explain that a bit more?' She also used paraphrase to clarify children's connections, as in line 9 when she says, 'So the connections are the wings and looking after people', although she was careful to check that the children agreed with her understanding. She kept the discussion on track by prompting children to explain and give reasons for the connections that they made, as in line 6: 'So what's the connection between tooth fairies and angels?' In this way Sally helped the children to acquire important 'bridging skills' that, according to Perkins (1985), allow them to transfer learning and insights from one context to another, new context. She reinforced the concepts she wanted the children to understand by her careful use of language, as in line 12, 'OK so there are *similarities* and there are *differences*', and line 22, 'You've all got some very exciting, *connected ideas*.' She listened very carefully herself to what the children were saying, as in line 28 where Gary makes the surprising connection between 'poppies' and the discussion of skeletons, coffins and being buried. When Sally probed the children about this connection, boy 7 offered the explanation in line 27, 'They are for people who have died.' This led him and other children to make further connections between 'poppies' and soldiers being killed during wartime.

Extract 1

Sally[5] […][6] I'm just interested in what Thomas just said because he said something about being rock solid. At the moment I feel quite rock solid. So I'm wondering how I go from being rock solid to being able

to go up to heaven. I don't understand how that would work. What do you think Molly?

Girl Well …

Boy 1 Angels, angels bring you up.

Sally If we could just hold on cos I can see Molly's got an idea starting. You've got an idea about angels Thomas. Molly what was your idea? Do you have an idea you could tell us about or is it an idea you're still thinking about in your head? Do you want a bit more time to think about it? OK, just out of interest can you change places if you believe in angels? <Children swap>. Fantastic, fantastic. What did you just say Joseph?

Boy 2 Tooth fairies are real.

Sally And what's the connection between tooth fairies and angels? […]

Boy 2 Tooth fairies take your tooth and they just (fly everywhere).

Boy 3 They make sure people are OK in heaven. When they die (…).

Sally So the connections are the wings and looking after people?

Boy 3 Yeah they look after people in heaven. Cos they only come down and they collect you in their …

Boy 1 And the angels, cos the angels, the other angels, not the tooth fairies, and the angels have, you know you'll be in heaven flying around but and they have a hoop but tooth fairies don't have a hoop round their head.

Sally […] OK, so there are similarities and there are differences between the angels. So, about everything going to heaven then, there seems to be an idea that it's something to do with angels taking you. Does anyone disagree? Does anyone not think the same as Thomas, any one have a different idea how you get to heaven? (…)

Boy 4 If you come down from heaven that means you be going to be buried.

Sally Can you explain a bit more?

Boy 4 The ghosts come back for you, and you're staying down in the ground and you're in a coffin.

Boy 5 Yeah.

Sally What's a ghost?

Boy 5 A ghost is a spirit.

Sally A spirit?

Boy 5 Ghosts are, ghosts are life coming out of you when you're a skeleton.

Class <Speaking over one another>

Sally Sorry guys, hang on a minute. Can you just wait one minute Gary? Cos we just want to, can you just make sure that you do this one at a time cos you've all got some very exciting, connected ideas. Sorry, so what were you going to say Gary? Um Thomas, we're missing people's ideas, OK. Sorry, James, what were you going to say?

Boy 6 Um, if, if you come down from heaven, (…) ghosts come down and take all your skin off (…) and then you get buried cos you're skeletons, skeletons, but they don't break up your bones.

Sally So, does that mean you disagree with Kyle? You don't think it's angels who take you, you think it's ghosts.

Boy 6 No, angels actually take you up to heaven, and when you come down ghosts actually take the skin off.

Sally Ah right. Sorry, can you let Callum finish his idea off.

Boy 6 When you're in a coffin underground and if you're a skeleton then you're in a coffin buried, you'll have a (stake) and um, ghosts are your lives, ghosts are the lives and they come out of your body and help for you.

Sally Brilliant, so out of your body. Can I just ask Gary? Gary just suddenly just one word and you just said "poppies".

Boy 7 They're for people who have died.

Sally Why? I wonder why people do that.

Class <All speaking over one another>

Boy 2 One, two, three, four, five.

Sally Oh, thanks ever so much Joseph. I can hear lots of people talking about the same idea, but we seem to have lots of ideas at once at the moment. Right, Joseph would just like to tell us about his idea.

Boy 2 I know why you have poppies. To put (onto) the soldiers who died in war.
Boy 7 And they fighted for you.
Sally So you've made a connection there. I'm just going to draw a little bit of a chain here to show the connection between the poppies, and, and what were you saying about poppies?
Boy 7 They fighted for you.
Boy 2 Yeah, they fighted all the horrible people, so when we were born.
Boy 3 In a different country.
Sally Could you just let him finish his idea Thomas is that all right? And then you can build on it if he's missed anything out. If you want to then.
Boy 7 From different countries. Um, we fighted and some (war) soldiers got shot and killed and they sended poppies to (put on the soldiers.)
Sally Wow Joseph, that's a lot of information. Well done.

Line 22 offers an example of Sally's attention to the Synectics facilitation principle, namely the importance of trying to capture *all* ideas. Here she attempted to pace the children to make sure that everyone had a chance to contribute. Although this strategy may mean some children may forget their ideas because they have to wait their turn, Sally was reinforcing the principle that all ideas are valued by showing that she didn't want to miss out on any. Line 40 again shows Sally's skills as a facilitator. She 'credits' boy 7 as the owner of the explanation that poppies are for people who have died fighting for us, and reminded the other children that they could build on this contribution once he had finished. In Synectics parlance, crediting and building are important processes that encourage collaboration and create a sense of co-ownership of the ideas. Perhaps most importantly, however, this extract demonstrated that Sally did not attempt to correct the children's reasoning or challenge ideas that another adult might be tempted to correct. As she commented during the interview where she discussed this lesson, 'Creativity is not about being right or wrong.' Like Prince and Logan (2005), she believed that children's trial connection making should be respected and that their ideas should not be rejected: 'It's about seeing every idea as a stepping stone to another, potentially better idea.'

After she had watched the video of this lesson, one of the things that Sally said she was most impressed by was how the children's listening skills and concentration had developed in a few short weeks:

> It almost feels like a different class from September, actually [this is in early November]. I feel that their listening skills have improved immensely. They are calmer. They are more focused. We spend a lot of time talking about our learning, so that they really understand what's going on and they are quite quick to pick up on what they are learning now, to explain it to other people as well. I think they are far more respectful and tolerant of each other as well, when it comes to discussing things.

The way that Sally conducted this lesson shows that P4C and Synectics can be used to good effect with very young children. Asking genuinely open questions and giving children plenty of thinking time allows children to offer extended comments and explanations indicative of high-order thinking. The children in Sally's class lived up to her claim that:

> Children can work in the abstract … learning is based on connections. Young children know their own thinking very clearly and if they are emotionally engaged they are going to find it very easy to tap into whatever is going on. We've got some community of enquiry going in the classroom as well.

Looked at from a developmental psychological perspective, this extract raises some interesting observations concerning the nature of young children's thinking. Based on studies of preschool children (two to four year olds), Susan Gellman and Gail Gottfried (2006) claim that four key features of young children's everyday thinking entail a considerable amount of creative thought. The features that demonstrate creative thinking in early childhood are the non-conventional and inventive use of language, pretence, theory construction and generalising from specifics. If this is the case, then one wonders whether young children need the kind of

formal training in thinking skills offered by P4C and Synectics.

Many of the features of young children's thinking that Gellman and Gottfried identify as 'creative' appear in Extract 1. For example, in line 11, boy 1 uses the word 'hoop' to describe the halo that angels (but not tooth fairies) have round their heads. Gelman and Gottfried would class this as an example of an inventive use of language or 'overextension', where a child extends the use of an object's name to a different object that is perceptually similar but that she or she does not know the word for. Also, between lines 13 to 27 the children construct some very interesting theories about how people get to (and from) heaven when they die and about the relationship between angels, ghosts, spirits and skeletons. The construction of intuitive theories of the world helps both children and adults to organize their experiences, to make predictions and to arrive at causal explanations for events. Gellman and Gottfried argue that there are two reasons why these kinds of theories demonstrate creative thinking. First:

> Children's knowledge is not simply the accumulation of evidence from prior observations or facts imparted by others. Rather, young children build their own concepts and connections – they creatively form new connections on the basis of the available evidence.
>
> (Gellman and Gottfried 2006: 231)

Second:

> The constructs children come up with extend beyond directly observable entities. Young children's knowledge includes information about ontology, causation, function, intentions and other properties that are not directly observable.
>
> (Gellman and Gottfried 2006: 231)

Not everyone would accept that these arguments offer a convincing explanation as to how the children in Sally's class come up with the concepts and connections given in Extract 1. For example, Susan Engel (2005) might claim that the extract offers some compelling examples of story-telling and narrative thinking, particularly examples such as the extended contribution offered by boy 6 in lines 23, 25 and 27. She argues that when children tell a story, the narrative frame allows them to oscillate between different spheres of reality; their experience of the real world 'as is', and the world of their imagination, 'as if'.

> Each story offers the child a world in which, for instance, objects have personalities, time moves backward and forward, boundaries between domains are permeable, and the relationship between symbols and referents is shifting.
>
> (Engel 2005: 112)

Bruner (1986, 1990) proposed that there are two modes of thought, the narrative and the paradigmatic. He claims further that for both children and adults, the narrative mode for thinking is one of the main ways that people make sense of the everyday world. By contrast, the paradigmatic mode is used to think about scientific phenomena and employs more formal, rule-based mechanisms such as deductive inference. Children begin to use the narrative mode to construct stories and explanations at a very early age, and although some of their stories may seem 'unruly' and 'idiosyncratic' to use Engel's terms, 'they provide vital clues to the child's inner thoughts and fantasies' (Engel 2005: 115). Drawing on the pragmatic and semiotic theories of C. S. Pierce, Oatley (1996) claims that when people engage in narrative thinking they use abductive and inductive inferential reasoning processes to construct explanations. Abductive inferences are particularly useful for constructing informal hypotheses to explain how something might have come about. Oatley (1996: 126) explains that generally, abductive inferences are always best guesses based on observation and a relevant knowledge base, even though that knowledge base may be partial.

The notion that children's explanations are best guesses, or abductive inferences based on personal observation and partial knowledge, is an attractive one, given the evidence in Extract 1 above. For example, in the discussion about the relationship between angels, tooth fairies and ghosts (lines 1 to 27), the children

identify and try to solve some difficult conundrums. First of all, Sally poses a problem, 'How do I go from being rock solid to being able to go to heaven?' The children propose the hypothesis that angels take people up to heaven, as like tooth fairies, angels are benevolent beings that have wings. As they have wings, therefore, they could take one up to heaven. The children know, however, that when someone dies it is customary to bury their body and that furthermore, they become skeletons. This poses a second problem: how can one be in heaven and at the same time be a skeleton buried in the ground? Again, the children propose an imaginative hypothesis: ghosts bring people back from heaven and take their skin off (but leave the bones). Leaving the skeletons in their coffins, the ghosts take the life that comes out of the body up to heaven again. The chain of inferences and the explanations that the children construct during this dialogue may seem creative and imaginative to an adult, but as Oatley suggests, to children they may well represent their best guesses based on their observations and knowledge. Fortunately, unlike adults, five to six year olds are not concerned with truth value in relation to their reasoning proceses.

It is not possible to offer a conclusive interpretation of whether the children's contributions to the discussion in Extract 1 are examples of intuitive theories based on abduction or fantasy narratives. All three accounts seem plausible; to differentiate between them, one would need to go back in time and question the children further to ascertain the status of their beliefs. Nor is it possible to establish whether the children would have come up with these ideas without Sally's coaching in P4C and Synectics thinking skills. What does seem clear, however, is that in this lesson, Sally created a positive and supportive climate that allowed these five-year-old children to contribute to extended dialogues. In these dialogues they were able to share their knowledge and understanding of real cultural historical events: why Guy Fawkes wanted to kill the whole world and why people in England put poppies on soldiers' graves. This supportive climate also, however, allowed them to draw on their imagination to co-construct novel and unconventional connections between tooth fairies, angels and ghosts. By and large, the theories discussed so far offer accounts of intuitive theory construction and story-telling that do not quite capture this collaborative nature of children's creativity. The next section attempts to redress this.

History Mystery Investigators: improvisational creativity

Socio-cultural studies of creativity have established that everyday creative activity, more often than not, is social, and that even celebrated artists and scientists derive their inspiration from collaborating with other like-minded people. Vera John-Steiner's (2000: 3) analysis of the biographies of people who have enjoyed highly creative partnerships, such as the artists Pablo Picasso and George Braque and the scientists Marie and Pierre Curie, has confirmed that 'Generative ideas emerge from joint thinking, from significant conversations, and from sustained, shared struggles to achieve new insights by partners in thought.' Similarly Sawyer has rejected the view that creativity is the prerogative of the lone genius:

> A common but misleading myth is that the innovative economy is based on a few brilliant and creative inventors and entrepreneurs. … Innovation is rarely a solitary individual creation. Instead, creativity is deeply social; the most important creative insights typically emerge from collaborative teams and creative circles.
>
> (Sawyer 2006: 42)

Synectics training is first and foremost a programme designed to facilitate creativity and innovation in team contexts. This section presents an extract from another lesson where Sally combined the use of dramatic role-play with a Synectics technique, the 'agenda meeting', to encourage her class to engage in a group thinking exercise.

The agenda meeting is one of the techniques Synectics facilitators use to support collaborative problem solving. Unlike conventional meetings where the agenda is determined in advance, usually by the chairperson, in a Synectics agenda meeting, the contributors volunteer agenda items during the meeting. Where a contributor has volunteered an item they become the 'problem owner' and must specify how other members of the group can help with the problem. So that everyone with an agenda item gets a chance to

have their problem aired, a time limit is set for discussion of each item. The facilitator runs the meeting and keeps a written record of each agenda item, who contributed it, and any action points that emerge from the group discussion. The facilitator does not take part in the group discussion. The agenda meeting structure is tightly disciplined, in that a strict time limit is set for the discussion of each item, and problem owners are required to be very specific about why they raised the item so that the group understand what is needed and how they can help. At the same time it is fluid, as no one knows in advance what agenda items they will be asked to discuss.

Sally wanted to use the agenda meeting structure to help the children to come up with questions and problems that they could try to solve, by pretending that they were members of a company called the History Mystery Investigators. She hoped that the meeting structure would provide a framework that would encourage the children to come up with some well-defined questions and problems for the agenda as well as some creative solutions. In their role as History Mystery Investigators, the children had received the following invitation:

> Dear History Mystery Investigators,
>
> I'm writing in response to your newspaper advert. I feel that our church in town would be perfect for the programme you are making. Not only is our church made of flint but we also have many mysteries about the history of our church. Most of our records have been destroyed in a fire but I have enclosed copies of some that survive, which I have got here, to give you an idea of the history of the church. What is most interesting is that the tower of our church was partly destroyed in a storm (please see photos) and gravestones have all been moved to the edge of the graveyard. We need help solving these mysteries. If you can help or if you have time please contact me at the above address.
>
> Yours faithfully,
>
> The Reverend D. E.

At the start of the lesson Sally reminded the children about how an agenda meeting was supposed to work and about their role as History Mystery Investigators. She told them that they needed to convene a meeting to plan their visit to the church and to decide which of its mysteries they would be interested in investigating. To help them get into role the children arranged their chairs as if they were sitting round a meeting table. Next Sally asked them to contribute two items for the agenda. Extract 2 is taken from the transcript of this part of the lesson at a point where the role-play had taken off in a direction that was not quite what she had anticipated.

Extract 2

Sally … I can tell you that the third thing on the agenda is a visit to […] Church. Now I'm just wondering what the first two things might be, on the agenda, whether they're things to do with your office, whether they're things to do with the people who work in History Mystery Investigators. Whether they're to do with jobs to be done before, or jobs you might be doing in the future. I mean what might be the first thing that's on your agenda? What might it be?

Boy 1 Um, that's there's been a rockslide. I heard it at nighttime. (…)

Sally Right, so why would History Mystery Investigators be told about a rockslide? What might be there that would be interesting to them?

Boy 1 There could be skeleton bones and stuff. Cos I saw it, I climbed that mountain and it fell. And I was climbing up and I fell back down because that rockslide was there. And I tripped over a rock and the rockslide crumbled and I got covered but I managed to get out.

Sally […] Right first of all, we've got, the first thing on our agenda then is that we've got a rockslide and some skeletons have been unearthed. Yeah? OK, what about, and we've just got to keep it really short, what about the second thing, just a headline that's on your agenda. Is it something about the office or people? What is it?

Boy 2 There's people been complaining that the trains haven't been running for years now. Cos um, the

tracks have been taken up and put into roads and the people are now very tired of, getting tired of driving around.

Boy 3 I can see that.

Sally Why would, one minute Luke, why would History Mystery Investigators be talking about (…).

Boy 2 Cos people are talking, like now, I think there's big holes and (…) where trains keep getting stuck, people have to spend hours and hours on trains while people mend it.

Sally I don't quite, do you feel, one minute (…), do you feel that is a job for people who investigate things that happen in the past? No. Courtney what would you say was a job for people investigating the past?

Boy 4 They wouldn't investigate that.

Sally You're not happy with that either Callum? History Mystery Investigators wouldn't do that? OK, what is, so the, we've got this first mystery is the rockslide and the skeletons which have been found, so what's this second mystery?

Girl 1 I know what it really is. 'Cos the people in the office, it's getting worser and it's getting very, very, very tired and no one's getting any water out of their taps.

Sally So there's a problem with a water leak in the building, and it hasn't been fixed, and your building is now left without water.

Girl 1 And, no water to drink.

Sally Ok, shhh, guys, it's very important that we listen to what Courtney's saying cos we're going to need to use Courtney's information.

Girl 1 And, it's everyone else hasn't got any water.

Sally […] It looks like Hannah's already thought about it because Hannah's body language has changed quite a bit. I'm just wondering, if we were start talking about this in our meeting then, what kind of things might we be saying? Well, the pipe, we've done the skeletons already.

Boy 4 The pipe is bursting underneath and water's coming up.

Girl 2 What about our office?

Boy 4 I know, but water's coming up and we'll all have to swim around.

Sally Um Ladies and Gentlemen, I have to ask you to go one at a time. I know this is an important issue and need to sort it out but we really, really do need to have clear ideas presented at these meetings.

Boy 4 This water is coming up, so we'll all have to swim around.

Sally I don't know about you, but I'm not happy, I'm not working in conditions like this. The thing is, we need some action, we need to sort this out really quickly this is urgent.

Boy 5 There might be a flood now.

Sally Are you able to get something like that Joseph? [Joseph nods] Cos we need it quite soon.

Boy 5 We could buy some Hoovers from a shop and suck all the water up.

Sally Just make a note of that. So Joseph, if you could sort out those Hoovers for us (I'll put your name down for that). Um, would you be able to sort that out this afternoon for us? OK. Ladies and gentlemen I need to remind you again that we just need to have one person speaking at a time at these meetings.

When Sally later reflected on the video that showed this part of the lesson, she commented that she felt the lesson had not achieved its aims and objectives in terms of the children's learning. Although the ideas the children had come up with were creative and imaginative, she thought that the children had not really understood the purpose of the role-play.

> When you are using excursion techniques like this, you've got to be so careful about role, because I've noticed that I wasn't very clear with the children about when I was in role, which role I was in, which role they were meant to be in, so for an excursion like that to be really successful, everybody has got to know where they are in terms of how they should be thinking at that moment. … To their credit, they were fully engaged and really excited about everything that was happening but it was a bit too much and they couldn't manage that and I didn't manage it appropriately for them at the time.

Looked at from another perspective, however, it is possible to offer a more positive interpretation of this extract. From the observations and analyses he has carried out with jazz and improvisational theatre groups, Sawyer (2003, 2006) has developed the concepts of 'improvisational creativity' and 'emergence' to describe how successful innovatory teams work. He claims that there are a few simple rules that actors use to generate improvisational dialogue. On of the most important of these is the 'Yes and …' rule. He explains this rule as follows:

> In every conversational turn, an actor should do two things: metaphorically say *yes*, by accepting the offer proposed in the prior turn, *and* add something new to the dramatic frame.
>
> (Sawyer 2006: 43)

Although at the outset the actors do not know how the dialogue will develop, when they use the 'Yes and …' rule to respond to and frame each other's turns, a novel scenario will begin to emerge. It is not possible to predict in advance what this will look like, as the scenarios that emerge from the improvisational processes are greater than the sum of actors' individual contributions.

It could be argued that the dialogue in Extract 2 demonstrated an improvisational quality. Although initially, the children offer individual suggestions of events and problems for the History Mystery Investigators to investigate, some of which are explicitly rejected by other children, between lines 13 and 28 a collective narrative about a flooded office building gradually began to emerge. Starting with line 13, the conversational turns began to obey the 'Yes and …' rule when girl 1 volunteered an idea for the second mystery, 'No one is getting any water out of the taps.' In the next line, Sally accepted this offer, and contributed some new information: 'So there's a problem with a water leak in the building, and it hasn't been fixed, and your building is now left without water.' Girl 1 built on this with 'And no water to drink.' In line 19, boy 4 started to develop Sally's 'water leak' idea and proffered the information that there was a burst pipe. The children did not respond to Sally's attempts (in lines 18 and 22) to remind them that in a meeting they needed to come up with some clear ideas. Instead they continued to add new ideas and to elaborate their chosen theme of a burst pipe that was flooding the building. Finally in line 27, boy 5 proposed an innovative course of action of buying some Hoovers (vacuum cleaners) to suck up the water.

Although the role-play was not a success from Sally's point of view, as the children did not stick to the 'agenda meeting' structure, Extract 2 offers an example of how a shared, creative narrative can emerge from improvisational play, and demonstrates how children manage the unpredictable process of collaborative emergence. Once again, this seems to challenge the view that young children need training in creative thinking techniques. Paradoxically, although Sally felt that she did not offer the children enough guidance in this session, she may actually have offered too much. When the children took active control of the role-play and moved away from the constraints of the agenda meeting, some creative improvisation began to emerge.

Discussion and conclusion

Although these two extracts can offer only a limited window on Sally's teaching and the many inventive ways she found to incorporate Synectics process tools and techniques into her teaching, the observations of her class over the course of the school year demonstrated that that she was a highly talented teacher. Her teaching methods were innovative and adventurous. She did not simply accept Synectics uncritically; she adapted the techniques to suit her own aims and objectives, and she combined them with other powerful teaching methods such as P4C and drama. Most of the time, she was able to achieve the kind of balance between structure and freedom that Craft et al. (2007) identify as the one of the hallmarks of teaching for creative learning. Although the discussions that took place in her lessons revealed a great deal of creative thinking, on the part of the children, however, it might be legitimate to ask whether they were also learning, and if so, what they were learning. If one accepts Prince and Logan's (2005: 155) argument outlined towards the beginning of this chapter that 'Learning and creativity are both basically, the ability to make connections to create meaning or significance' and that the process of thinking to learn is akin to creative thinking, then

yes, these extracts suggest that the children were learning. This position, however, seems a little unsatisfactory. Critics might say that it is too easy to claim that creative thinking is the same as 'learning', particularly where learning is understood in the sense normally used in formal educational contexts. Perhaps a more precise definition of creative learning might be more helpful.

In *Creativity: Find it, promote it*, the QCA (2005) identified the following five elements as characteristic of creative learning:

* asking questions
* making connections
* imagining what might be
* exploring options
* reflecting critically.

With the possible exception of 'reflecting critically', examples of all five elements can be identified in Extracts 1 and 2. According to this view, therefore, one can accept that the children in Sally's class were learning as well as thinking creatively. As discussed above, however, it is not clear from these extracts whether the children needed the support of a formal creativity training programme in order to make creative connections, to invent story scenarios and to engage in dramatic improvisation. As Engel (2005) and Gellman and Gottfried (2006) argue, the features that demonstrate creative thinking emerge in early childhood in parallel with the emergence of language. It does not appear that children need special training to think in this way, it seems to come naturally. Similarly, as Sawyer (this volume) argues, young children are accomplished at improvisation and story telling from an early age and demonstrate this through their socio-dramatic play and pretence. This suggests that when children first start school, they are already competent creative thinkers and storytellers.

Both creative and narrative modes of thinking seem to involve abductive rather than deductive inferential reasoning. Paradigmatic thinking is difficult; it is based on formal logic and deductive inference, and is used for mathematical and scientific thinking as well as some forms of philosophical thinking. As Oatley (1996: 123) comments: 'The mind is more resistant to objects based on the paradigmatic mode …. Such objects need elaborate cultural assistance to allow them to enter the mind,' Piaget (1926) maintained that this kind of thinking does not develop until early adolescence. Somewhat more recently, it has become apparent that, even in adulthood, many people find this kind of thinking problematic or counter-intuitive, (see Johnson-Laird 1999 for a review). Many developmental psychologists and educational researchers would argue, however, that even in middle childhood, children can demonstrate causal reasoning and deductive thinking if they receive appropriate training (e.g. Burke and Williams 2008; Toth, Klahr and Chen 2000). If we accept the arguments offered by researchers such as Bruner, Gellman and Gottfried, and Engels and Oatley, then it seems reasonable to suggest that although children may need training in paradigmatic modes of thought, they do not necessarily need further training in narrative modes of thought. The examples of young children's thinking discussed in this chapter would seem to bear this out.

So what does Synectics bring to the educational experiences of children and their teachers? The Synectics programme claims to offer training to groups and organisations in process skills that facilitate innovation and that allow productive creative collaborations to develop in team-working contexts. It also offers strategies for maintaining a positive emotional climate, as well as a structured framework that permits people to harness and evaluate ideas in a disciplined manner. It does not claim to 'teach' creative thinking per se. Perhaps then, under Sally's guidance, the children in her class were learning how to collaborate rather than learning how to think? Sally's own view of what they were learning was that they were learning the kinds of communication skills that would allow them to work together more effectively in the future:

> The more work we do on dialogue, the better that the children get at crediting other people's ideas and taking an idea, and tweaking it to become their own. I think it's very important for creativity and innovation and things like that. And the speaking and listening; really, the better focus you have when you are listening and … able to speak very coherently about things, [these] are all those sorts of skills

that you need to be able to make Synectics work.

Moran and John-Steiner (2004: 11) maintain that genuine creative collaboration 'involves an intricate blending of skills, temperaments, effort and sometimes personalities to realise a shared vision of something new and useful'. Based on their studies of well-known artistic and scientific collaborators they claim that transformational creative work and collaboration that pushes at boundaries takes time and is only realised through sustained effort. What one sees in schools, according to Moran and John-Steiner's definition, is more likely to be cooperative group work than creative collaboration. Nevertheless, the activities and language that support critical and creative thinking, together with the speaking and listening skills that Sally practised with her five-year-old children, are precisely the kind of 'culturally valued practices' (Gauvain 2001), that are seen as desirable by knowledge societies and innovation economies. The evidence presented in this chapter (and in the EXCITE! reports more generally) suggests that for her pupils, Sally's appropriation of Synectics processes and the way she used these to inform her practice and to create a positive, emotional climate in her classroom, began to equip them with some of the skills they will need as future workers and citizens in the knowledge society.

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Notes

1 Details of Synectics and the Synectics Education Initiative can be found at http://www.synecticsworld.com/ and http://www.creativity-unlimited.org.uk/

2 Mathilda Joubert now runs the educational branch of the Synectics Education Initiative. Details of its training activities and methodology can be found at http://www.excite-education.org

3 The EXCITE! reports can be downloaded from http://www.creativity-unlimited.org.uk/ or http://www.synecticsei.org

4 Guy Fawkes was a Catholic conspirator who received lasting notoriety for his part in what became known as the Gunpowder Plot, an attempt to blow up King James I and his members of Parliament during the formal opening of the 1605 session of Parliament. The anniversary of this event is still remembered every year on 5 November when UK families and communities celebrate by lighting bonfires, burning effigies of Guy Fawkes and letting off fireworks.

5 In this and subsequent extracts the name of the teacher has been changed. The names of the children she addresses or mentions have not been changed.

6 In these extracts and subsequent extracts (…) indicates sections of talk that were unclear and […] indicates where sections of the complete transcript have not been included in the extract where the talk is simply a repetition of the previous phrase or where it the teacher is using behaviour management language (e.g. 'Can you wait until she's had her turn', 'I'm hearing too many people talking at once').

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