Sessions with *Pixie* in P.S. 87: A Classroom Log

Early in 1982 I decided I needed to get some firsthand experience in the teaching of *Pixie*. *Pixie* had been published the previous year and was already in use in a number of school districts. Since I wasn’t getting much feedback from the teachers, I decided to offer an abbreviated course in *Pixie* to some fourth graders. The school I selected was P.S. 87, in Manhattan. The principal, Naomi Hill, was hospitable to the idea, and the classroom teacher, Gloria Goldberg, made me feel quite welcome. I promised to arrive at 9:00 every Thursday, and to stay for 30 or 40 minutes. I knew I could hardly accomplish much in such a short time: *Pixie* would normally be offered for three 45-minute sessions a week for the entire school year. In all, I was able to manage only twelve sessions, during which time we read the first six chapters and the last episode in the seventh.

The fourth graders, being from the West Side of Manhattan, were a highly diversified group. A few struggled with the reading, while others read with the pacing and expression of adults. Several were just becoming familiar with English. Some were bold and outspoken, while others were timorous or silent. Indeed, on one occasion in which we were “going around the room” with a series of questions, one frail, anxious little girl burst into tears when it was finally her turn to answer. But generally there were lots of hands up during discussions, and I felt satisfied that they understood the material in *Pixie*, and that most of them seemed to enjoy it.

The accounts of each session were written from memory after each session, and since no audio tapes were made, it would be difficult to check their accuracy. But this is of little importance: what matters is whether regular classroom teachers succeed in using *Pixie* to cultivate the thinking skills of their pupils and generally to enhance their students’ powers of reflection. Having tested the waters a bit, I concluded the experiment feeling encouraged.

**February 11, 1982**

We read the first half of chapter 4 aloud, then proceeded with discussion. Considerable interest in *Pixie*’s *faking* being hurt, and appreciative response to exercise on faking. Also, a warm reception from class to notion of provoking a fight so as to get the other person in trouble—apparently a familiar tactic.

We talked about the fact that *Pixie* and Miranda gave different accounts of Ellen’s invitation. I asked if *Pixie* could be right and Miranda wrong. Yes, they said. Could Miranda be right and *Pixie* wrong. Yes. Could both be right? Yes. Could both be wrong? Yes. They seemed comfortable with the idea that these were the alternatives, and that with more information we might discover which was the right alternative.

We discussed the difference between “doing something on purpose” and “happening by accident.” Sam brought up the illustration of traffic accidents.

— Do traffic accidents happen where neither driver is at fault?
— Yes.

— But if one driver is at fault, is it still called an accident?
— Yes.
— Could both drivers be at fault?
— Yes.
— And it still would be called an accident?
— Sure.
— So the word “accident” is used to cover cases where no one is at fault and where one or several people are at fault?”
— Yes.

**EXERCISE: Faking**

In the following cases, say whether you think the person was or was not faking.

<table>
<thead>
<tr>
<th>Number</th>
<th>Scenario</th>
<th>Faking</th>
<th>Not Faking</th>
<th>?</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Scott: “Ever since Linda pinched her finger this morning, she’s walked with a limp.”</td>
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<td>2.</td>
<td>Joel: “Sure Myrna walks funny. But that’s because she lost her shoes, so she’s wearing her sister’s.”</td>
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<td>3.</td>
<td>Cassie: “My baby brother, Butch, is always crying for food. He’s quiet right now, so he must be pretending he’s full.”</td>
<td>☐</td>
<td>☐</td>
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<td>4.</td>
<td>Triggerman: “The police chief is bluffing. All those squad cars around the house don’t mean a thing.”</td>
<td>☐</td>
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**DISCUSSION PLAN: What Ellen intended**

Pixie says that Ellen “meant to” bring the invitations to Miranda and *Pixie*. We see here that “intended” and “meant to” are synonyms (mean the same thing).

The purpose of this discussion is to find out more about what happens when we “intend” to do something.

1. If Ellen “meant to” bring the invitations, does that mean she *planned* to bring them?
2. If Ellen “meant to” bring the invitations, does that mean she *wanted* to bring them?
3. If Ellen *wrote* the invitations, does that mean she *wanted* to write them?
4. If Ellen *forgot* to bring the invitations, does that mean she *intended to forget* to bring them?
5. If Ellen *remembered* to bring the invitations, does that mean she *intended to remember* to bring them?
6. If you are in the habit of brushing your teeth every morning, does that mean you *intend* to brush your teeth every morning before you actually do?
7. If you get sick and are unable to do your homework, does that mean you *intended* to do it before you got sick?
8. Discuss the following conversation:

   **Teacher:** “Did you do your homework?”
   **You:** “No, I got sick.”
   **Teacher:** “Before you got sick, did you intend to do your homework?”
   **You:** “No.”
   **Teacher:** “No?”
   **You:** “I never had a chance to intend to do it. But I can remember that, after supper, I intended to intend to do it.”
We then proceeded to talk about ambiguity. I wrote the word on the board, and Mrs. Goldberg reminded them of the importance of context in grasping the meaning of a word. (It occurred to me to refer to the similarity between the words "ambiguity" and "bigamy," — a word with two meanings in the same context and a man with two wives at the same time; however, I repressed the impulse.)

We talked about relationships that could be observed and those that could not be observed. They were clear about family relationships (that being a cousin or a nephew was not observable) but less clear about the perceived validity of "being taller than" or "far from."

We did an exercise on family relationships. One child was taken in by the question, "If two brothers each have a sister, does that mean they have two sisters?" However, other members of the class explained the correct answer to her.

Finally I asked, "If your parents had no children, does that mean you probably won't have any?" One student said (with agreement with several others), "If your parents had no children, you wouldn't exist." To which one student responded, "You could if you had been adopted." Shows their ability to examine a question carefully, see what it presupposes, and to give counter-examples.

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**EXERCISE: Ambiguities**

1. Daisy: "Kenny, what are you doing here in the department store?"
   Kenny: "I'm trying to get something for my baby brother."
   Daisy: "How much do you think they'll give you?"
2. Muffy (standing by table in cafeteria): "Hi, Linda, can I join you?"
   Linda: "I didn't know I was coming apart."
3. Glenn: "I can't stand kids between seven and nine."
   Ronnie: "Oh, for me, the worst time is from three to six in the afternoon."
4. Sport (watching football game on TV): "Hey, dad, it's twenty to ten."
   Father: "Well, that's forty minutes past your bedtime, so turn that thing off!"
5. Herb: "This dog of mine is sure smart."
   Maize: "What makes you think so?"
   Herb: "I asked him how much three minus three was, and he said nothing."
6. Teacher: "Sally, what's one and one?"
   Sally: "A ball and a strike."
7. Teacher: "Cliff, wouldn't you like to sit down for a spell?"
   Cliff (to himself): "That could mean all sorts of things."

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**EXERCISE: Comparisons**

Certain words are very useful for suggesting relationships. These are comparison words. Check the list of words on the right, and see which ones fit best into the sentences on the left. If none seem right for a sentence, put a question mark in the blank. If more than one seems right, say which they are.

1. The doctor said, "I'd better operate on the ____________ patient first!"
2. "This tower of the World Trade Center," said the man, "is ____________ than that one."
3. The man in the store said, "Yesterday's fish are ____________ than today's."
4. The President said, "The Washington Monument is ____________ than my house."
5. "This book," said Trish, "is ____________ to read than that one."
6. "Airplanes," said Gus, "are ____________ than cars."
7. "Why is it," asked Vince, "that your neighbor's lawn always seems ____________ than your own?"
8. One horse said to the other, "Oats are ____________ than hay."
9. Lake Superior is ____________ than Lake Huron.
10. Circles are ____________ than squares.

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**EXERCISE: Comparisons and comparatives**

1. With respect to color, eggshells are ____________ than mashed potatoes.
2. With respect to size, trucks are ____________ than cars.
3. With respect to light, light bulbs are ____________ than candles.
4. With respect to taste, sugar is ____________ than salt.
5. With respect to shape, doughnuts are ____________ than crackers.
6. With respect to sound, airplanes are ____________ than bicycles.
7. With respect to courage, R2D2 is ____________ than R2D2.
8. With respect to beauty, deer are ____________ than pigs.
9. With respect to weight, water is ____________ than air.
10. With respect to speed, sound is ____________ than light.
11. With respect to age, Miranda is ____________ than Pixie.
12. With respect to strength, Olive Oyl is ____________ than Popeye.
13. With respect to wealth, children are ____________ than grownups.
14. With respect to intelligence, elephants are ____________ than tapeworms.
15. With respect to odor, garbage is ____________ than roses.

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Today students returned their homework (writing the beginnings to a story whose ending had been given to them). We then read pp. 29-31, and discussed p. 29.

Many theories of what happens to the light when you turn off the switch. Does the light "go out?" If not, what happens to it? I asked if dark was the absence of light. Puzzlement. I asked if dark was to light as cold was to heat. Some tentative assent. I contrasted that sentence (written on board) with "hands are like feet." I asked how hands were like feet (they said fingers, toes, etc.) I asked them to complete the sentence "Hands are like feet as _____________." Here a flock of hands went up:

"as one nostril is to the other nostril"

"as elbows are to knees"

"as your upper lip is to your lower lip"

"as your left hand is to your right hand"

(Notice that most of them are similarities of appearance; the elbows-knees comparison is a similarity of function. This one came from James.)

<table>
<thead>
<tr>
<th>EXERCISE: When is it appropriate to ask questions?</th>
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<tbody>
<tr>
<td>Directions: In the following situation, indicate whether you think the question is appropriate or not. Then tell the reason for your answer. Not</td>
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<tr>
<td>1. My mother's new friend came over for a visit last evening. I answered the door and said, &quot;Hi! How old are you?&quot;</td>
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<td>2. Last month I went to see my grandparents. In the corner of the living room they have a desk with many drawers. I asked my grandfather, &quot;What do you keep in each drawer?&quot;</td>
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<tr>
<td>3. My sister, Ellen, had a date last night with a new boyfriend. When he came to the door, I let him in, and asked, &quot;Are you going to take my sister out more than once?&quot;</td>
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<td>4. I met Karen on my way to school. She looked as if she had been crying. I asked, &quot;Why have you been crying?&quot;</td>
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<td>5. My older brother brought home his report card. As soon as he came into the house, I asked, &quot;Did you pass everything?&quot;</td>
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<td>6. Cynthia invited me over to her home to have dinner. When we were all seated, I asked Cynthia's mother, &quot;What is that meat?&quot;</td>
</tr>
<tr>
<td>7. Cynthia came over to my house for a visit. As soon as she came in she asked my brother, &quot;Do you have any girlfriends?&quot;</td>
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<tr>
<td>8. On my first day at camp, I met my bunk counselor. I asked her, &quot;Are you mean?&quot;</td>
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<td>9. Sally and I went to the softball game after school. When we arrived, I saw Carol. Immediately, I asked, &quot;Are you my friend?&quot;</td>
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<td>10. The other day, my sister, Francine, fell and hurt her arm. She had to go to the doctor. As she was leaving the house, I asked, &quot;Will you be coming back?&quot;</td>
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A.M.S.
DISCUSSION PLAN: Light and dark

1. Pixie asks where the light goes. But first, where does it come from? Is it stored up in the light bulb?
2. Pixie asks where the light goes. She apparently suspects that the word “out” is ambiguous. But where does it go? Or does it go anywhere?
3. Miranda says the light “goes to sleep.” Is that an ambiguous expression?
4. Is Miranda correct that the light goes where the dark comes from?
5. Is the dark really something, or is it just the “absence of light”?
6. Is the light really something, or is it simply the “absence of dark”?
7. Is dark the absence of light in the same way that cold is the absence of heat? Is that an analogy?
8. If you put some water on the stove and it gets warmer, does that mean that the cold in it has gone away?

EXERCISE: “As if” analogies

Pixie remarks, as she grasps what Miranda means, “It was as if a light went on in my head.”

There are two things to be noticed here. First, there is an implicit analogy, seeing what you mean is like having a light go on in my head. The analogy is implicit because it has to be reconstructed in order to take the usual shape of an analogy.

Secondly, the use of the “as if” raises this question: Is it possible that all analogies can be understood as hypotheticals? In this particular case, it might read, “If I see what you mean, then a light goes on in my head.”

This is one way of understanding analogies. Let’s see how well this approach would work with some particular examples. Here are some analogies; can you reconstruct them in the form of “If . . . then . . .” statements?

Example: Kittens are to cats as puppies are to dogs.

Reconstructed version: If kittens are the offspring of cats, then puppies are the offspring of dogs.

1. 3 is to 6 as 5 is to 10.
2. Typewriter keys are to typewriters as piano keys are to pianos.
3. House keys are to houses as ignition keys are to cars.
4. Cartons are to milk as bags are to potatoes.
5. Butter is to toast as syrup is to pancakes.
6. Rain is to puddles as snow is to snow drifts.
7. Eating is to feeling full as not eating is to feeling hungry.
8. Love is to hate as hope is to despair.
9. Peanuts are to elephants as milk is to cats.
10. Colors are to artists as tones are to composers. Note that, as you try to reconstruct these into “If . . . then . . .” form, you are compelled to state the relationships which are being compared. You are forced to spell out, “If 3 is half of 6, then 5 is half of 10.” And “If rain is the cause of puddles, then snow is the cause of snow drifts.”
I didn't identify "simile" and "analogy" as the names of the two types of comparisons, but we contrasted them, and they seemed to understand the difference. Molly said that the analogy was a statement that said one relationship was like another.

We then considered the word "mean" on line 10 of p. 29. "What does 'mean' mean?" I asked. Sam said it could mean like mad, or it could mean that you were planning to do something (meaning to do something), or it could be like the meaning of a word in a sentence.

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**EXERCISE: Mind and analogy**

Pixie says that, if space and time are made up of relationships, maybe our minds are made up of the words and ideas that stand for those relationships. As Mr. Mulligan says, she's making an analogy. An analogy is a comparison of one relationship to another. It's a relationship between two relationships.

For example, someone could say:

The relationship between the hand and its fingers is the same as the relationship between the foot and its toes.

Or, to put it more simply:

Hands are to fingers as feet are to toes.

An analogy is **good** when the relationships being compared are strongly similar.

An analogy is **not good** when the relationships being compared are not much alike.

Would you say the following analogies are good or not good?

1. My mind is to my body as air is to earth.
2. My mind is to my body as nothing is to something.
3. My thoughts are to my brain as voices are to a telephone.
4. My mind contains feelings the way an ocean contains waves.
5. My thoughts move in one direction as a river flows in one direction.
6. My thoughts are in my mind the way air is in my lungs.
7. My fears and hopes are in my mind the way crocodiles and giraffes are in a zoo.
8. My mind is in my brain the way my tongue is in my mouth.
9. My mind contains my thoughts the way a fishbowl contains fish.
10. My mind is to my brain as light is to a light bulb.

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**EXERCISE: Exact and inexact comparisons of relationships**

1. Which of the following comparisons are exact and which are inexact? In the case of inexact comparisons, can you say in which respect the comparison is being made?

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<tbody>
<tr>
<td>1. Fathers are to sons as older brothers are to younger brothers.</td>
<td>Exact</td>
<td>Not Exact</td>
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<tr>
<td>2. 2 is to 4 as 4 is to 8.</td>
<td>Exact</td>
<td>Not Exact</td>
</tr>
<tr>
<td>3. One roller skate is to another as one ski is to another.</td>
<td>Not Exact</td>
<td></td>
</tr>
<tr>
<td>4. Chairs are to tables as knives are to forks.</td>
<td>Not Exact</td>
<td></td>
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<tr>
<td>5. Squares are to circles as rectangles are to ovals.</td>
<td>Not Exact</td>
<td></td>
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<tr>
<td>6. Balloons are to blimps as gliders are to airplanes.</td>
<td>Not Exact</td>
<td></td>
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<tr>
<td>7. Leaves are to trees as bricks are to houses.</td>
<td>Not Exact</td>
<td></td>
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<tr>
<td>8. Concrete is to highways as steel is to bridges.</td>
<td>Not Exact</td>
<td></td>
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<tr>
<td>9. Letters are to envelopes as pages are to books.</td>
<td>Not Exact</td>
<td></td>
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<tr>
<td>10. Boys are to girls as men are to women.</td>
<td>Not Exact</td>
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</table>

II. Make up five more exact comparisons of relationships.

III. Make up five more inexact comparisons of relationships.
I then offered an example (without using the term “standardization”) of how you could tell if two contrasting sentences meant the same thing. I wrote “All the students in this room are smart” and “Only the students in this room are smart” on the board, and asked what they meant. For the first sentence, someone said it meant “Each student in this room is smart.” But the second baffled them; I think its scope bothered them. One student said it means the students in this room are smart, but not those in the rest of the school. I asked if it might mean “not those in the rest of the world.” They seemed to find that very far-reaching indeed.

We tried another: “All oaks are trees,” and “Only trees are oaks.” But this example collapsed when Natasha confused “oaks” with “yolks.”

So I used “All cats are animals” and “Only animals are cats.” They again had trouble with the “Only” sentence, but this was partially the fault of the examples I offered. “Could a fish be a cat?” I asked. “Yes,” someone said, “a catfish.” At this I agreed out loud that a bird might be a catbird. Obviously we were in trouble with examples of birds and fish that the children could consider “animals.” So I asked, could the closet be a cat? Could the floor be a cat? This helped us understand what it meant to say, “Only animals are cats.” (And give them practice in counterinstances, it might be added.)

I then explained to them the standardization rule for statements beginning with “Only,” and gave them an exercise to do. Since “All” and “Only” confusions were among those that were most prevalent in their pre-test with the Q-4, this was part of our prescriptive reinforcement.

Overall, the session was the most didactic we’ve had, but I think the alternation of loose discussion and tight didactic learning of logical principles is a productive one. The rules give a sense of intellectual security and cognitive power that the more philosophical discussions disclose to them that they need.

I think we have to learn to live with a fairly loose fit between the *Pixie* readings, the subsequent classroom discussions, and the working on exercises. We would like them to follow in proper sequence, but this doesn’t always happen. Sometimes an exercise out of sequence is necessary, and if it is pedagogically unsound that time around, it still may be necessary to prepare the ground for the next time around, because I’m beginning to think that *Pixie* should be read twice in one school year, slowly building up the skills, the first time around, with which to penetrate much more deeply into it the second time around.

May 6, 1982

The last meeting with the class was 5 weeks ago. Two sessions were missed because of holidays, one because I was called away at the last moment, and one because the class had to have an examination. Yesterday, Mrs. Goldberg had the class complete the reading of Chapter Six, and do some of the analogy exercises. She said it didn’t go too smoothly.

We script-read pp. 40-42, and after some discussion of the individual examples of analogies given in the chapter, we proceeded to the “Review Exercise” called “Evaluating analogies.” This went very well. (I can’t help feeling that, pace Benjamin Bloom, things go much better if evaluation precedes the straightforward memorization or learning of materials. The exercise requires that given analogies be graded [the letter grades they’re familiar with are E, G, F, and U]. I think the requirement that they judge the excellence of the analogy is something they relish, and contributes to their understanding of what analogies are. Folklore tells us that we should first understand the facts, and then make judgments, but Nelson Goodman is more correct when he notes that the only reason to prize the evaluation process is because it leads to better perceptions: evaluation is not the end, but a means to an end.)

Anyway, I asked the members of the class what they thought of “Thoughts are to thinkers as shoes are to shoemakers.” Most of them thought it a good analogy. Thinking to play devil’s advocate, I asked what shoemakers made shoes out of. Leather, rubber and glue, they said. And do thinkers make thoughts as shoemakers make shoes, I asked. Mollie said, Sure — out of other thoughts. I told her her answer was wonderful.

At this point some students wanted to get some clarification on “what an analogy is,” and we reviewed the difference between analogies and similes. James offered his example, remembered from almost two months back, that knees are to legs as elbows are to arms. The class agreed it was a good analogy. I asked why. Because, Ashaki said, you flex an arm at the elbow and you flex a leg at the knee. “Giggling is to laughing as whimpering is to crying” was adjudged good because “it was soft to loud on each side.” “Pins are to pinning as needles are to needling” was rated poor, but the students didn’t quite know why, since they didn’t know what “needling” was.

“Bread is to puddles as butter is to rain” was considered unsatisfactory; Sam said it should have been “Bread is to butter as puddles is to rain.” We tried that and likewise rejected it: rain causes puddles but butter doesn’t cause bread.

Given a good rating was “Words are to stories as seeds are to flowerbeds;” because, someone said, the words bloom in your mind.

And “Trying to get someone else to think is like walking a dog” was rejected because the two things were not similar; however, there was some difficulty in saying just why — surprisingly. At this point, one student raised a perceptive question. Some analogies involve the relationship on the left (between two terms) being compared with the relationship on the right (between two terms). But “Trying to get someone else to think” and “walking a dog” do not seem to involve relationships between two terms. I suggested that one person tries to get another to think, and a person and a dog are related when someone walks a dog. But of course the questioner is right: some analogies compare one way of doing something with another way of doing something, and involve verbs rather than nouns. The family of analogies is not a simple one. But the “doing A is like doing B” analogy seems to me reducible to A is to B as C is to D, or at least is comparable to it, as in “Putting sauerkraut over your pizza is like putting chow mein in your milkshake;” an example we didn’t quite get to before the 45 minutes was over.
May 7, 1982

Today we spent a couple of minutes at the beginning of the hour reviewing the "All-Only" distinction. I drew a picture of a set of turnpike tollbooths with all lights on (i.e., all gates open), and with a sign over the three center booths saying "passenger cars only." Then I drew long lines of cars going only to the center booths. "What's wrong?" I asked. Rudy said, "They think they can't go in the other booths, but the sign doesn't mean that."

We then script-read the last episode in Chapter 7 (about Adam). They said they were interested in the notion of "the unbelievable." I asked if they could give me an example of something unbelievable. The little wisp of a girl in the front with straw-colored hair, Nora, replied, "War." This fairly staggered me, so I asked her to explain. "It's just so horrible," she replied, "it's just more than we can —" Is what she was trying to formulate this: that war is unthinkable? I failed to follow it up, because this interpretation didn't occur to me at the time.

It's worthwhile pointing out, in passing, how often the first comment from the children is the most dramatic. The other comments so often take the lead of the first, but in a less original way; the first often has a breathtakingly original quality about it.

We worked some more on whether unbelievable stories could be true, and whether fictional stories could be true ("fictional" was their word.) One student brought in the notion of "tall tales" and we talked about Baron Munchausen a bit. At first, one or two students insisted that Adam would find the theory that we have grown more plausible than the one that we have shrunk. But we discussed the difficulty of this, considering such examples of the possible truth of implausible ideas as that "the sun doesn't rise." What I found difficult to elicit from the class was the notion that one doesn't select among ideas on the basis of their plausibility or implausibility, but on other grounds. What other grounds? It was not until the end of the hour, the very end, that Sara proposed "evidence." I figured that was close enough.

Matthew Lipman