Flexibility and Transfer (or Generalizing)

A colleague tells a story about his daughter learning to write. Her teacher tells him in a conference that she is doing badly at writing in school. My colleague protests that she writes wonderfully at home; however, the teacher shows him examples of her school writing that, he concedes, confirm the teacher's view. He takes the matter up with his daughter, who is genuinely surprised that the two activities are related in any way. What she knows about writing at home does not seem at all relevant to school writing. I have certainly had this experience with children, especially in math. Strategies used to calculate area for a math quiz seem to have no relevance when the child is faced with calculating garden space. Children often know things from their writing that they fail to use when solving problems in reading. Some children keep home and school spaces rigidly separate, believing they are unrelated. The stories they tell in these different life spaces are different—different genres, settings, characters, and goals.

These are problems of transfer—the failure to generalize learning from one situation or problem to another. Teachers and other researchers of all stripes have puzzled over this problem for a long time. However, in some classrooms children quite flexibly generalize what they have learned. For example, in one classroom children had been using the strategy of "stepping into" characters—taking their perspective. One of the children then did this in science as they studied duck-

lings. He hypothesized about the basis for the duckling's behavior by taking the duckling's perspective. When he did this, another child, used to looking for such parallels, noticed and pointed out to the class what he had done. It seems that the less compartmentalized we make children's learning lives, the more likely they are to transfer their strategic problem-solving to other situations. These children were also flexible in the ways they applied strategies to solve a given problem. Rather than repeating the same strategy, or quitting, they were likely to use multiple strategies. What makes this possible? How do teachers build bridges between activity settings, making it so that the agency a child exercises in writing transfers to her reading or math? How do they get a child to apply strategies flexibly and in new situations?

Actually, a lot of the conversations we have already discussed have implications for flexibility and transfer. For example, encouraging children to entertain certain identities can help. Consider this. A study compared the arithmetic learning of a group of high school students apprenticed to shopkeepers with that of a group of shopkeepers. Both groups were taking an adult education class to improve their arithmetic (Beach 1995, cited in Cobb and Bowers 1999). Which group would you predict to be more successful at learning arithmetic? It turns out that the shopkeepers were more successful at transferring their learning to their out-of-class shopkeeping lives, most likely because they held the same goals and activity frames in and out of class. In both situations they had the same goal: making their business more profitable. The high school students, on the other hand, had different goals in the two settings: acquiring knowledge in one setting, generating a profit in the other. This helps explain why children who learn words for their spelling test commonly don't transfer the learning to their writing. Once a child incorporates into his identity a sense that he is a writer doing writerly things (or a scientist, mathematician, and so forth), he can ask himself in a new situation (not necessary consciously) what he might do *as a writer*, since those roles do not stop at the border of a single activity setting. Imagining oneself as the writer of a piece can also help transfer writing experience to one's activities as a reader.

The following few examples of teacher talk are ones that we have not yet encountered, but that serve to encourage transfer and flexibility.

✿ ***"One of the things people do when they start a story is think of what they know. Mathematicians do this too. . . . Let's try it." (Allington and Johnston 2002a, p. 180).***

Reminding children to begin a new activity by taking stock of what they already know (in current mechanistic terms "activating prior knowledge") has several functions. First, it reduces the magnitude of the problem to be solved. Second, it puts the new problem in the context of old, already-solved problems. Third, it opens the possibility of more connections among the new knowledge and what is already known. However, this particular invitation takes a couple of extra steps. It represents the kind of problems readers face as similar to those that mathematicians face, encouraging active transfer of a strategy across what would otherwise have seemed to be quite different activities. The ability to solve new problems flexibly depends on how the problem is viewed in the first place—whether the strategic demands are seen as similar to other, familiar problems (Kuhn et al. 1995). The invitation encourages children to increase the boundaries within which they look for problem similarities, stretching beyond the surface structure of activities to more metaphorical levels. The "let's" is also important in this regard. Collaborative problem-solving helps break down the boundaries between different tasks because a collaborator can bring a different perspective to a problem, reframing it so that it is more like a familiar one. More on this later.

✿ *"How else . . ."*

It is wonderful when a child solves a problem. We can then ask her to regale us with the story of how she solved it, building her sense of agency. After having done that is the perfect time to ask how *else* she might have solved it. Doing so sustains the possibility of choice (and thus agency) while maintaining a sense of flexibility—there's always another way. Even with less successful experiences it is possible, after pointing to what went well, to consider options with questions such as, "Is there anything you might do differently?," which emphasizes choice retrospectively—like revising and editing. Such questions are a bit more risky, though. They require a secure relationship within which exploration of past decisions is interesting and not grounds for blame.

Else is a very powerful word. It simultaneously builds flexibility and implies a range of other important messages. For example, "How else could the author have said that?" not only builds a flexible approach but also reminds students that writing is always intentional and, implicitly, that it is always consequential. To bring the implicit reminder forward we might ask how saying it that way would change

reader's interpretation. In a similar way, "What else do you think they [audience] would like to know?" opens possibilities for inclusion in a piece of writing, but at the same time, reminds the young writer of his responsibilities to his audience. It is also a reminder that writers always make choices about what they include and exclude from their writing—what they choose to tell and not tell. Taking this concept back to children's reading opens a central conversation for critical literacy: What is the author not telling us? Whose perspectives are not represented? and so forth.

✿ *"That's like . . ."*

The word *like* has two primary functions. It draws attention to connections (with other experiences, books, authors, situations, practices, words, and so forth) and it makes metaphors, both of which are fundamental not only to transfer, but also to understanding and reasoning. Connections are at the heart of comprehension or understanding. They provide anchors and retrieval routes. The more connections, the more flexibly something can be accessed.

Transfer involves overcoming apparent dissimilarities between activities. For example, reading Web pages and reading a book are sufficiently different to limit the extent to which children might transfer what they have learned to do in one to their activities in the other. The same might be said of different genres of writing or of reading and writing. Increasing transfer primarily involves simply overcoming these apparent dissimilarities and encouraging children to ask what ways one activity, problem, or role, is like another. This means thinking beyond the literal to the metaphorical, and the word *like* is very good for invoking metaphors. We want children to ask themselves not only "What do I know about this?" but "What do I know that is like this?"

At the same time that thinking metaphorically helps with transfer, it has other benefits. Metaphors provide new ways of understanding and deepening meaning, "stand[ing] with one foot in the known, while placing the other in the unknown." They are what Judith Lindfors (1999, p. 170) calls "reaching devices." For example, teaching about parallel circuits, June Williamson (Wharton-McDonald and Williamson 2002, p. 92) explains that "electricity finds another way to go. Kind of like when you're caught in traffic: Sometimes you can find another path around the jam." A series circuit she likens to the World Series: "One game after another. And if you lose a game, you're out."

Indeed, Brian Sutton-Smith (1995, p. 87) refers to the mind as fundamentally *multi-metaphoric*, observing that young children are very competent with metaphoric thought. He points out that "once children can speak, they move endlessly through the vocalized plural play of metaphor." As an example, he reports watching his two-year-old granddaughter playing in a sandpit, "first pouring the sand and calling it Coke, and then rounding it and calling it an egg, and then lengthening the shape and calling it a sausage, and then banging and slapping it with a vocalized rhythm which she called a song, and so on. The properties of the material in the child's hands were 'poured' through a vocal string of metaphoric signifiers." Along with Bateson (1979), Sutton-Smith argues that metaphor is essential to the evolution of thought, which advances by finding similarities among forms.

The word *like* has other incidental properties, too. When applied to people it emphasizes our common humanity over our individual and cultural quirks and is thus productive in terms of building a caring, tolerant community. However, because *like* draws comparisons, it also raises the possibility of noticing contrasts, absences, and disjunctures. These are the crucial foundations not only of problem formation and learning, but of critical literacy. We can ask about similarity and difference in the treatment of others, for example.

✿ *"What if . . . ?"*

Thinking flexibly and metaphorically involves expanding the imagination, and what-if questions insist on an imaginative act. What-if questions can be used to expand the contexts in which particular strategies might be used, or particular identities might hold sway. Because we can't routinely be presented with multiple contexts, we help children do mind experiments to think themselves into other situations and try out their learning or strategies, making the necessary accommodations. For example, after a child has told us how he managed to research the characters for his historical fiction piece, we might ask, "What if you were writing a science report? Would any of these strategies help there?"

"What-if . . ." and "suppose . . ." invitations have additional benefits. They develop children's ability with hypothetical talk and abstract thinking. They are the foundation of mind experiments and give children the chance to understand the possibility of multiple versions of reality. These abilities are fundamental to both productive individual choice and to negotiating collaboratively productive meanings and solutions as

required for democratic living. At the same time, these questions develop children's argumentation skill, particularly because they invite "if . . . then . . ." statements and the thinking that lies behind them. What-if questions used in the context of narrative can also develop children's understanding of narrative structure, because the questions require construction of alternative possibilities using narrative logic.

These hypotheticals can be used to explore worlds, behaviors, and choices without real consequences. Don Graves (1994) points out that posing the hypotheticals such as, "Suppose you were going to put some dialogue into this story. Where would you put it?" can produce the necessary learning without the resistance that might come from the anticipated effort needed to actually do it. It opens the imaginative possibility, and accomplishes the necessary instruction without risk. Of course, once the possibility is imagined, it can be tempting to actually do it.

Hypotheticals are the stuff of invention. They are also a useful way into critical literacy since they can provide a way of stepping out of the known and taken-for-granted. For example, a discussion of the disparity in pay between male and female athletes reveals that many children find it perfectly reasonable. However, when asked, "What if your mother were an athlete?" most of the children suddenly find it unreasonable. Mind experiments like this can allow us to notice things that are otherwise too naturalized to be noticed, and help us use our experience to understand possible events we have not experienced.

✿ *Playful language.*

I should not leave the topic of flexibility and transfer without a comment on playfulness. Language play takes the pressure off language and literate practice and invites experimentation with alternative practices and realities. Writers such as Dr. Seuss clearly understand this. Play and playful use of language of all kinds can be particularly productive. There are few better ways to draw children's attention to the structure of words and texts than through language play and parody. Freed of the burden of meaning, nonsense rhymes and the like reveal the internal structure of words as an object of interest rather than of labor. Parodies do the same at the text level. Indeed, Sutton-Smith (1995) reminds us of Vygotsky's stance on play in which we should

> imagine two girls who are sisters playing a game called "two girls who are sisters," as an exemplification of the way in which rule

> structures are first engendered in play, so that meaning arises and abstracts itself from everyday contextualization. He says, "From the point of view of development, creating an imaginary situation can be regarded as a means of developing abstract thought" (Vygotsky 1978, p. 103). If this should be true, and it may well be, it means that play has a direct, not an indirect, relationship to cognition. (p. 72)

Following Bakhtin, Sutton-Smith (1995, p. 71) observes that "laughter is the most primitive form of parody and satire by which the sanctity of established ways gets impugned. It is life's basic form of unofficial response." In other words, it is a good vehicle for flexibly breaking rules and borders. As a vehicle for progressing to critical literacy, playfulness with language might also be indispensable.

An additional benefit, as I mentioned at the outset, is that playfulness can develop children's interest in language. For example, having read William Steig's *The Amazing Bone* (1976) with students it becomes possible for me to add into my classroom vocabulary "As I live and flourish . . ." and to stop inappropriate behavior with "Have you no shame, sir!" or, better, "You worm, you odoriferous wretch!" or even "Yibbam sibibble!" These latter can be used to admonish because children's awareness of the source makes their use funny, taking the personal edge off the reprimand. At the same time, it builds the children's vocabulary and their interest in language, and shows them an excellent resource for further language development.

A Longer Example

At this point, I think we should put some of the brief snippets of language into context, so let me give another elaborated example of a teacher-student interaction that pulls together much of what I have already presented. Consider this transcript of a writing conference taken from an excellent book called *How's It Going?* by Carl Anderson (2000).

> Carl: You know, Maya, you're just like a lot of writers who write memoirs. Like Jean Little, for example. You know that story from *Little by Little*, the one in which her classmates make fun of her because of her eyeglasses?
>
> Maya: Yeah.

Carl: Both you and Jean Little packed several scenes into a single piece of writing. But Jean Little didn't just stretch the first scene and list the rest. She stretched most of the scenes, the scenes that really helped us understand what she went through. You could revise by trying to make your memoir more like the ones you've read in class so far this year. That's what I want you to try—picking one of these other scenes and stretching it like you stretched the birthday candles.

Maya: Okay.

Carl: Which one would you want to try?

Maya: Maybe . . . I kind of like it the way it is.

Carl: I can understand that. But I'm still going to challenge you to take a risk as a writer by trying out Jean Little's way of stretching several scenes. And if you decide you don't like what it does to your piece after trying it, that's okay. . . . I nudge students to try things I think will help them grow as writers. So which scene do you want to stretch—the scavenger hunt, the sleeping routine, your mom tucking you in . . .

Maya: I think my mom tucking me in.

Carl: [*starts her on a new piece of paper*] I'll check in with you later in the period to see how it goes (pp. 77–78).

This conference is really quite forceful, but when Carl returns to Maya, she is satisfied with the outcome and chooses to make use of the new writing she produced. The chart on the following pages reviews in tabular form what I see as significant pieces of this conference.

Perhaps it seems in places as though I am stretching the intentions and the implications. I don't believe so, but if even half of my inferences are true, repeating these discursive currents over and over each day cannot help but have a powerful effect, the more so because it is not only Carl who is applying this discursive pressure toward agentive narratives. Once these conversations become natural in the classroom—ways of talking and interacting that imply roles, relationships, positions, authority, agency, epistemology, topics of conversation, and expected identities—they also become part of children's conversations.

In this chapter and the previous one I have emphasized the kinds of conversation that encourage children to become agentive, to act for themselves and see themselves as active and thus responsible. In part, this involves recognizing multiple ways of seeing and solving problems,

Carl's Talk	***Commentary***
Maya, you're just like a lot of writers who write memoirs.	Carl offers a specific identity: authors who write memoirs. He names memoirs as a kind of writerly thing to notice.
Like Jean Little . . . that story from *Little by Little,* the one in which her classmates make fun of her because of her eyeglasses?	Carl uses a specific example to show that the identity claim is not empty praise. It shows the parallel between the writing and the writers, but also between the two lives. *Like* also becomes more normalized as a way of talking and thinking.
Both you and Jean Little packed several scenes into a single piece of writing.	Carl extends the evidence for the identity and opens a possibility for Maya's life and text narratives, and establishes the equivalent epistemological authority. He names "scenes" as something to be noticed—analyzing the task.
But Jean Little didn't just stretch the first scene and list the rest. She stretched most of the scenes . . .	Carl articulates and names the process used by the mentor author and notes that it is one Maya has already used—further task analysis.
that really helped us understand what she went through.	Carl shows the consequences of the author's use of the process/strategy, and the agentive, intentional nature of writing.
You could revise by trying to make your memoir more like the ones you've read in class . . .	Carl opens an agentive possibility for Maya's writing along with an identity challenge.
That's what I want you to try—picking one of these other scenes and stretching it like you stretched the birthday candles.	Using positional authority, Carl requires Maya to pick up the challenge, retelling the previous agentive narrative to maintain the sense of agency. The task analysis maintains choice and opens the possibility for later strategic planning in writing.
Which one would you want to try?	Carl offers choice, and thus agency in the process, but constrains the possible narratives.
I can understand that. But I'm still going to challenge you to take a risk as a writer by trying out Jean Little's way of stretching several scenes.	Recognizing Maya's expression of her own agency, Carl adds to his positional authority the challenge to the identity already offered. This is an offer of a narrative with a specific identity and a challenge to overcome. If she picks up this challenge, she cannot help but pick up the authorial identity. To the extent that the identity is inviting, the narrative is inviting.

. . . if you decide you don't like what it does to your piece after trying it, that's okay . . .	Carl offers Maya a narrative in which she can regain the agency he has temporarily taken away by limiting her choices.
I nudge students to try things I think will help them grow as writers.	Reminding Maya of his role as a teacher, Carl reminds Maya of her identity as a writer, but "help them grow" indicates that she also has an agentive role in her growth.
So which scene do you want to stretch—the scavenger hunt, the sleeping routine, your mom tucking you in . . .	"So now that you have agency as a writer and a learner, how do you want to retell your life narrative?" Carl offers specific choice, and hence agency. With the specificity is the recognition that he is interested in Maya's life details, strengthening his relational position and Maya's authority.
I'll check in with you later in the period to see how it goes.	In case Maya decides to abandon the offered narrative, Carl at once closes the door on the lesser narrative and shows interest in her personally and as a writer.

and a certain relish in doing so. If we fail to accomplish this, it does not bode well for them once they leave the educational environment. Unfortunately, it remains possible (perhaps even common) for learners to leave school believing that they know a great deal yet unable think for themselves, not seeing themselves as active, inquiring individuals. The more we help children build a sense of themselves as inquirers and problem-solvers, and the less they see boundaries between domains of inquiry, the more they are likely to transfer their learning into the world beyond school.

Even this is not enough. I want children to see themselves not only as inquiring individuals, but as inquiring individuals who are part of a diverse community that inquires, whose members, through their active participation and diversity of perspective, contribute to each other's intellectual growth. It is to this aspect of teachers' talk that I now turn.