This article promotes an alternative to the more conventional and propositional ways of thinking about curriculum matters. Conventionally, curriculum theory is presented as statements of propositional knowledge, even though philosophy has long recognized the significance of tacit, nonpropositional knowledge. The increased attention to teacher thinking suggests that curriculum theorists might attend to how teachers themselves think about the curriculum and its components, particularly to how teachers construct curriculum content as they engage in professional practice. Conceivably, curriculum theory may be unable to provide usable accounts of curriculum-in-use unless we consider this aspect of practical professional knowledge.

Schön’s study of the nature of practical knowledge is the starting point for this article. He rejects what he calls “technical rationality” as a way of thinking about how professionals solve practical problems. Technical rationality obscures problem setting, a crucial aspect of professional thinking.

When we set the problem, we select what we will treat as the “things” of the situation, we set the boundaries of our attention to it, and we impose on it a coherence which allows us to say what is wrong and in what directions the situation needs to be changed. Problem setting is a process in which, interactively, we name the things to which we will attend and frame the context in which we will attend to them.

Therefore, how teachers name and frame issues about curriculum content is important. This form of teachers’ curriculum knowledge differs from our more comfortable ideas about the propositional nature of teachers’ subject-matter knowledge.

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This article focuses on metaphor, beginning with a review of recent explorations into metaphor and curriculum. We can extend this work by examining the metaphorical language that teachers use in talking about their work. The metaphorical language provides us with intriguing insights into how teachers name and frame issues about curriculum content because the metaphors represent something of teachers’ practical curriculum knowledge.

METAPHORS, CURRICULUM THEORY, AND PRACTICE

Beyond literary theory, scholarly interest in metaphors ranges from exploring how they are understood to how they function linguistically. Similar interest among curriculum theorists is also evident. Kliebard’s analysis of three major metaphors in curriculum (production, growth, and journey) is a case in point, and Taylor gives more recent and more comprehensive cases in Metaphors of Education. Here, contributing authors draw attention to how metaphors give rise to whole theoretical systems for thinking and speaking about educational matters. Taylor introduces the book with a discussion on the function of metaphor, suggesting that this sort of language “works by means of transference from one kind of reality to another.” He singles out the metaphor of quality control for special attention and shows how this figure is linked to accountability and to the market view of consumerism, with its consequent interest in such concepts as performance contracting.

In the same volume, Aspin considers several theories of metaphor before arriving at the need to account for “the role and function of metaphor in educational discourse”:

Metaphorical locution is a kind of “persuasive definition” it is a particular kind of “speech act” which comes off, or fails to come off, in proportion to the hearer’s understanding of and familiarity with the kinds of meaning defined by the demands of the context in which the utterance is issued... That is why metaphor is similar to lying in perlocutionary effect. it is what it prompts us to think, see, or imagine that is important, what it promotes and evokes in us by the particular concatenation of unusual terms of which it is constituted. It provokes an “arrest,” which, the speaker hopes, will precipitate a disclosure.

Aspin acknowledges that some “metaphors in education have become so widely employed, of course, that they have slowly lost all power to act in this

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way. Yet this fate does not detract from the initial "innovative and creative power" of novel metaphorical expression.

Lawton examines a similar range of educational or curriculum metaphors in the same volume. The objective metaphor that we have come to associate with a technological approach to curriculum thinking, and the cultural reproduction metaphor are examples. Also, he entertains classifying curricular metaphors, offering as examples curriculum as a building operation, as food, as a plant, as a product, and as a commodity. He suspects, however, that this approach would not be illuminating:

There would be no correlation between use of metaphor and classroom practice. Many of the metaphors are so deeply embedded (like the word curriculum itself) in educational language, or even in everyday speech, that they are used automatically rather than consciously.

These considerations of curriculum metaphors come from a view of curriculum that sets it apart from classroom practice. This view is consistent with a long tradition in curriculum thinking. Somehow classroom events come from instructional objectives that, in turn, come from educational goals and aims. Schubert refers to this view as "the dominant curriculum paradigm," institutionalized by Tyler's categories.

Another more satisfying view of curriculum acknowledges the centrality of what teachers bring to their classrooms by pointing to different kinds of curriculum. A striking simplicity and moment to the distinction between the paper curriculum and the curriculum-in-use is obvious. What gets transmitted to teachers as curriculum policy and even texts becomes "modulated" and possibly transformed by teachers' various understandings. If we add the learned curriculum to the other two kinds of curriculum, we can begin to understand why several students of curriculum have become interested in classroom discourse, teachers' cognitions, and what children understand. In the early 1970s, a group of curriculum theorists became intrigued with the messages that texts and teaching convey to children about the nature of science. More recently, issues surrounding how we might understand...
teachers' professional knowledge have puzzled us. Others have made significant headway in investigating children's understanding of scientific concepts. All this work is curriculum work, conducted at the level of practice, though seeing it that way is hard if the perspective on curriculum is fettered by the dominant curriculum paradigm and remains at the level of theory.

The significance of curriculum study conducted at the level of practice is evident in Clandinin's case study of the foundational image that appears responsible for one teacher's professional work. Clark acknowledges the significance of this approach to curriculum work when he admits his initial surprise at finding "curricularists" interested in his psychological studies on teacher planning. He then realizes that we can view planning "as a link between thought and action that, in many respects, defines and sometimes distorts the content to be taught." That teachers have the position and capacity to define (and possibly distort) content implies a different view of the professional's place from that depicted in the traditional paradigm's account of the relentless and uninterrupted movement from goals to instruction. What becomes important now is how teachers construe curriculum. A study of teachers' curriculum metaphors offers insight into this facet of curriculum practice.

METAPHOR AS A METHODOLOGY

How can we understand the ways in which teachers define curriculum? Assume first that gathering information about an individual's thinking without seriously perturbing it is difficult. Indeed, the disturbance may be so great that we are incapable of accurately ascribing the results of our intervention: The thinking may have been present or absent before we intervened, and we can only say that the thinking we have documented occurred when we intervened. This affliction accompanies all cognitive research, and the methodology presented here is not a solution, yet the approach holds promise for ameliorating the problem somewhat.

The present approach is fastened to the idea that how teachers define or construct elements of their professional realities is highly significant to understanding professional action. Professionals' view of their reality is pivotal to

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action within it, just as their construction is uniquely important. Attempts to understand this facet of teachers' professional thinking are many, although research in the area is relatively young—Halkes and Olson's seminal collection illustrates the range of approaches taken." The approach discussed here assumes that one of the more valid ways to understand professional construction comes from attending carefully to professionals' language as they speak about professional work. In the approach, the researcher takes what teachers say seriously, the researcher does not impose his or her own interpretive system and takes special note of the language teachers select. The choice of language is not accidental, but represents something of the professional's thinking. This study emphasizes the metaphors occurring in the language.

Recent work in metaphor has shown the power of metaphorical language in our attempts to think about or construct our worlds of action. Schön, Reddy, and Lakoff and Johnson all argue that metaphor is not just a linguistic entity but a process by which we encounter the world. "Schön believes that metaphors are generative, that they are "central to the task of accounting for our perspectives on the world, how we think about things, make sense of reality, and set the problems we later try to solve." Reddy applies Schön's notion to discourse, arguing that the metaphors we use to talk about human communication encourage us to think of it as a conduit. Metaphors such as "Your concepts come across well" and "He put his ideas into words" portray communication as a simple matter of transferring thoughts and feelings. Lakoff and Johnson extend this view of the influence of metaphor, arguing that human thought processes are largely metaphorical. "The human conceptual system is metaphorically structured and defined. Metaphors as linguistic expressions are possible precisely because there are metaphors in a person's conceptual system." I also use metaphor as a theoretical and analytical device in my continuing work, which is driven by two research assumptions. First, the metaphors teachers use when they talk about their work represent something of the way they construct their professional realities. Second, the presence of the same metaphors in interviews conducted over several months gives assurance that

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19 Rob Halkes and John Olson, eds., Teacher Thinking: A New Perspective on Persisting Problems in Education (Lisse, the Netherlands: Swets & Zeitlinger, 1984).
the language is common for the teacher in question and is not an artifact of the interviews themselves. In the light of these assumptions, the questions asked in the interviews become relatively unimportant. In this research, I interviewed teachers eight times over four months. Each interview was directed toward a specific topic, such as the students in the class, a typical day, and teaching approaches, the questions were essentially unplanned, save to encourage the teacher to speak and to elaborate: “Have you seen a change in them since the class started?” “What do you mean by clean-up day?” “So would that be a typical morning?”

The quantity of data for each teacher studied varies from a maximum of about 15,000 lines in early work to a minimum of about 4,000 lines in later work. All interviews were transcribed verbatim on the IBM 3081-G academic mainframe at Queen’s University, so that the system’s versatility for editing and manipulating files could be exploited when handling the large amounts of data. The data sets for each teacher were handled similarly. A few interview scripts were read carefully, and a list was made of the metaphorical terms that occurred frequently. Then, using a procedure called USEARCH, the teacher’s entire data set was searched for instances of metaphors on the list. The output from USEARCH, which contains instances of the terms and three lines of context, was edited and then studied. The process was repeated as new metaphors were found. The examples provided below represent samples and not the total output from USEARCH.

PRACTICAL DEFINITIONS OF THE CURRICULUM

Clark’s statement that teachers might define and sometimes distort content is strikingly similar to Schön’s ideas of naming and framing and offers a convenient starting point for discussing some selected examples of metaphors. The studies of teachers’ metaphors have revealed a varied assortment of metaphors that represent such commonplaces as lessons, mind, attention, management, and time. Not all of these metaphors are of interest to curriculum theorists. But the idea of defining and distorting draws attention to the particular metaphorical figures that appear germane to curriculum issues.

Information and Ideas for Alice and Bryn

Among the many types of metaphors identified by Lakoff and Johnson are ontological metaphors. When we speak of such classroom common-
places as lessons, attention, and grades as if they were objects or commodities, we are invoking ontological metaphors. In several cases studied, teachers have referred to information and ideas as commodities. In these cases, the ontological metaphor is precisely similar to what Reddy identifies as the conduit metaphor. Uses of this metaphor not only depict information as a commodity but also imply that public communication works by transferring this commodity from one person to another, possibly in or along some conduit.

For example, in Alice's speech, information is broken down, got out, given, missed, picked up, needed, kept, thrown in, and touched on, whether the talk is about facts, directions, answers, commas, clauses, feedback, or the order of a football play: "break down the information"; "get immediate feedback", "get it out more clear (sic) to the kids", "picking up the information", "throwing in a fact"; "I'll give him a serious answer." We get a similar view of communication in Alice's use of terms representing ideas: "I give them an idea", "I'm having a hard time putting it into words." The conduit metaphor is equally evident in Bryn's speech. "I didn't catch what he said", "it just comes out that way", "get their information", "I give them my opinion", "they took it as it came", "he expresses his thoughts"; "I've lost the thought that I had."

Some curriculum theorists might be concerned that the conduit metaphor's inherent representation of communication improperly portrays how we come to understand one another's meaning. Yet it is not unjustified to suggest that the language Alice and Bryn use to define or name aspects of curriculum content must hold some significance for how they construct their professional reality.

**Ede and Covering Content**

In previous work, I have explored how some metaphors Alice and Bryn used represent lessons as moving objects that, among other things, cover ground. In a different way, Ede, a teacher of Texas history in grade 7, talks of curriculum content as something that is covered. "a chapter that he's already covered", "I needed to cover latitude and longitude and compass rose and things like that early in the school year", "I try to cover a lesson in five different ways"; "[The curriculum objectives were a] sequence of what we expect to cover in that year's time", "I felt that I didn't need to take any more time than just giving answers because we'd gone over that yesterday."

External factors influence Ede's thinking about curriculum content.

At the beginning of the school year, the assistant principal told all of the people that she was going to evaluate that these objectives needed to be written down in their plan books. In other words, when we turn in lesson plans each week, those objectives

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need to be in there. [Interviewer: From the curriculum guide?] From the guide, right. And just saying that has helped me. That means I have to go back and look in that curriculum guide and decide which objective I’m working on. And it has helped me just that emphasis. [Interviewer: How does that help you?] Well, knowing that this is the objective that I have down that I’m supposed to cover.

I follow the sequence of [the text]. But every year I have the Spanish here less and less. I mean by that there’s about six chapters in that textbook that deal with the Spanish in Texas, and it seems that we never get through all that. So I’ve sort of looked at that, and I’ve decided. “Now what do they need to know about the Spanish in Texas?” Every year I tend to cut the text down a little bit more on that. And my objective is to spend more time with modern Texas. Now, this year we got through the discovery of oil, which is about 1901, and then I just covered modern Texas through a couple of filmstrips.

Evidently, “covering” the prescribed content is a major preoccupation for Ede. Possibly her defining or naming the curriculum in this way reflects her administration’s influence. This thinking appears to present something of a dilemma for her, she might prefer to define curriculum differently were it not for the pressure from without:

I remember a World History class that I did about five years ago, and there, you’re so intent on covering so much material. . . . which, probably, is a mistake, too. I think students learn more in doing activities, it’s putting knowledge to work is what it is. And that’s when it really becomes part of them. But you get caught in that thing—you don’t have time to do that. Because you are so tied to a curriculum. You may not have to cover that whole book, but you’ve got to cover the main facts in that thing.

This glance at Ede’s language suggests that she deliberately invokes the metaphor of content coverage as a way to define or frame the curriculum. But her content-coverage definition conflicts with another definition that frames curriculum with attention to how she thinks students best learn. by “doing activities.” Ede defines curriculum as something to be covered while admitting that students learn better by using knowledge than they do by having it covered for them. Ede’s case illustrates the significance of the teacher’s definition or definitions and points directly at the inadequacy of the paper curriculum.

Chad and Learning as an Obstacle

The 13 interviews with Chad (totalling 7,382 lines) differ from the data of others. The data sets of Alice, Bryn, and Ede do not contain much talk about the details of subject matter and of learning subject matter. Chad’s interviews, though, contain enough talk about his subject, mathematics, that we can develop a tentative perspective on the underlying metaphorical figures that account for Chad’s view of his subject and his students’ learning of it.

Chad frequently uses an orientational metaphor to refer to the students’ ability and to the difficulty of the subject matter, the more able students are “higher” and the less “lower,” just as the more difficult material tends to be “up” and the less “down”. “they’re not up to [advanced geometry]”; “those kids
are very low”; “we have some of the top students . . . in this class”; “this lower
group down here”, “[the lesson] is above their heads”; “I felt the thing was
completely over their heads.” This orientation for thinking about achieving in
mathematics provides a special sense of having to work hard at something,
just as one has to work hard to overcome gravity. The sense is that students
achieve in mathematics by overcoming something, and Chad’s language
suggests the notion that what students must overcome or conquer is an
obstacle. Indeed, learning mathematics becomes the obstacle. Some associa-
tions are familiar: “they ran into some problems”; “they dread coming to
[math]”; “I try to calm them and . . . dispel the fear . . . [of] algebra”; “a kid that’s
struggling [with learning].”

From the perspective of the curriculum-in-use, this way of depicting
Chad’s conception of his curriculum makes more sense for the coherence it
lends to understanding the language he uses to talk about the work that he
presents in class. Attacking and overcoming the obstacle requires an appro-
priate set of tools and the skills to manipulate them: “you have to show . . .
[them] how to find the least common denominator”, “show them how to find
the square root”; “you’ll have to . . . break the problem down”, “that’s the best
way . . . to approach that”, “the slow kids didn’t get [the skill] the first time.”
The tools are the formulas and procedures that are “built” on theories, and the
formulas and procedures themselves have steps to go through: “we tried to
build on the theory”, “we’ve been dealing with formulas”, “they could arrive
at the products in a short method”, “I told him what to do to continue”; “we’re
going at this step”; “how well you follow those procedures and . . . steps.”
Chad occasionally hints at what facing the obstacle means: “he was real
nervous, and I was trying to help him along.” Many times, he stresses following
the steps needed to acquire the necessary skills. “they don’t want to follow
instructions”; “they’d begun to get on track of what they’re going to have to
do”; “he was totally lost.”

Success at overcoming the obstacle or mastering the steps for a solution
occasionally requires more than the appropriate tools, success may also re-
quire encouragement. “you’d have to drag the solution out of her.” Even mas-
tered, the skills may not be held. “a lot of them aren’t going to retain it all”

The metaphor of learning as an obstacle captures Chad’s language and
suggests how he conceives of the curriculum and what is required of students
in their learning. Certainly, in the dominant view of curriculum content, to
solve problems students must master the steps. Thus, Chad’s naming or
defining the mathematics curriculum fits this dominant view.

Mike and the Curriculum as Steps

Mike teaches mathematics and computing in a penitentiary school. His
program is established to accommodate the “continuous intake” policy of the
Penitentiary Service of Canada, a policy requiring the school’s programs (at all
grade levels) to be accessible to any inmate at the beginning of any sentence. Mike's courses also need to satisfy the curriculum guidelines promulgated by the Ontario Ministry of Education. Therefore, he sequences his courses in small steps so that he can tailor instruction to the individual. Mike's metaphor of steps illustrates his translation of the paper curriculum into curriculum-in-use within demanding institutional constraints:

When I start them off on [computer programming] I have to run through basics with them. . . . They go through those demonstration programs. . . . We work through how to use the computer, how to use a disk, how to get a program started . . . . Sometimes I will have to work them right through the long-handed method [of programming].

The best thing is to work through the course. Just grab the materials and try some of it out. . . . I show the student how to get started. . . . In grade 11, we get into more complex things . . . . He is going very, very far in computers . . . . He has really progressed quickly [in computers].

These fragments about the computer course, its components, and progress in it suggest that Mike views the course as a sequence of steps, each requiring mastery before the next is attempted. The sequence has a start but no end, except as determined by its divisions into grade levels, and students progress through the sequence by working at the steps and gaining the skills progressively. This image of a course being a series of progressive but discrete skills also comes through in the language Mike uses to describe the mathematics courses:

People do math in big chunks . . . . If they are having trouble, I will advise them to try the basic level . . . . I always say, "Go on to the next bunch of questions." . . . If they do want to get ahead, they can because there still is that structure of the course.

This overall definition of the curriculum seems to be important to how Mike constructs his views of students. Much discourse about students describes varying degrees of progress along the sequence. Mike's views of the courses and of the students connect in the language he uses when discussing student motivation and satisfaction, and particularly in how he sees mastering steps as contributing substantially to his students' self-confidence.

They feel that they can do something worthwhile, they can gain some skills and use those skills—get a better image of themselves . . . . I can't say that it is love of knowledge [that] has caused these people to enthusiastically participate in school . . . . Part of the idea of learning for some of them [is] it looks good to have grade 12. In the [computer] class, there is a rub-off in terms of enthusiasm and curiosity, and it is nice to watch the excitement that goes on . . . . Students tend to respect a little bit of a challenge to satisfy their talent . . . . There is a lot of pride because they didn't do well in school before . . . . They now realize that . . . . it can be done.

Mike understands the relationship between self-confidence and the distinctive sense of control that can come from learning to work with computers.
They can get a better feel for the machine and [for] being in control of the machine and having power over the machine, it is something that they can control. It gives them a bit of a sense of gaining control of the machine, you can manipulate it, you are the conductor of the computer. . . . [The computer students] usually find [that their] interest takes off with them. . . . They have that curiosity [with computer programming] . . . Enthusiasm is high with the computers. . . . Students work harder and longer on the computer than over a math problem. . . . It is important that they gain confidence using the computer, and it is a confidence builder. . . . The programming seems to work for them in building up confidence. . . . It really is important that their confidence be boosted with the machine.

Mike's curriculum becomes defined in practice in terms of steps not just to accommodate continuous intake but also to enable him to meet his view that students need to develop confidence in learning and in themselves. Mike's case illustrates how the conditions of practice force a change in the official definition of the curriculum. What emerges is curriculum content defined as steps—a powerful metaphor that allows Mike to speak of his courses and his students.

Irene's Pressures of Time and Content

Irene participated in the project during her second year of teaching in which she taught grade 10 physical science and mathematics. An inspection of the interview data reveals Irene's dominant perspective on the curriculum as content or material to be covered, as it is for Ede. For Irene, concern for covering content is accompanied by a concern for time that recurs in her language. "we were a little bit pressed for time", "I've been trying to catch up"; "I wanted to get more done than I actually did." Time is also a concern in her planning. "The thing that is getting me in math is the time I spend doing the questions. I can get them all! It just takes time." Irene's concern for the content and her accompanying preoccupation with time clearly leads to her being unable to teach as she might wish to. "I want more time for student interaction, but I can't afford the time, and that bothers me." Also, when she finds that her students know less than she expects, time is consumed by "going back over all the basics" and "taking a step back and going over everything again."

Irene's framing curriculum as content to be covered has several clear implications. The first emerges in her implicit acknowledgment that until she is teaching a course for the second time, she is unable to give attention to "the really important things"—activities that relate to learning how to learn, classroom interactions, and an application of what has been taught. The second implication emerges in her perception of portions of the curriculum in her Mathematics Curriculum and Instruction course and of the Ministry of Education's Curriculum Guidelines:

In math class, he had a lot of ideas of motivational techniques and little things to play with and make it real. I really question whether you can do that on a day-to-day basis
and still get the curriculum covered. . . . It’s nice to have all those demonstrations and toys and games, but are you actually going to get the material covered?

The new Guidelines actually say what you are supposed to do. If you are using all these things, you’re going to be sacrificing something, and it's going to be content. I don't see that as coming off.

The third implication emerges in her teaching approach. Irene, like Mike, takes a step-by-step approach. But Irene wants to ensure content coverage, not to tailor instruction to the individual as Mike did.

Grant’s Control over Content

Interviews with Grant, who has over a decade of experience teaching grade 7 science, show a different construction of curriculum as content because it seems to be less the focal point of professional concern. Instead, curriculum content becomes an object that Grant manipulates to achieve what he perceives as the important purposes of his teaching—“values” and “survival skills,” which Grant considers necessary preparation for his students’ learning in subsequent grades. “I don’t want them to process a lot of content”; “I want to use the content as a vehicle to teach some of these other skills that are going to be more important to them.”

Further examples of Grant’s language demonstrate his treatment of the curriculum as something that is tangible and manipulable:

Let’s look at the whole picture and how do the little bits fit in the picture more like a jigsaw puzzle, and if you get all the little bits right, you should get the perfect picture . . . In other words, could they take in the material, really think about, and absorb it. Mix it around.

Grant has forcefully taken control of the curriculum, but Irene has not. Differences in the schools and grade levels may well account for their different approaches, of course. But Grant’s language suggests a forcefulness, even an aggressiveness, that may also contribute to his framing the curriculum as something that he controls instead of it controlling him. “I can steal some time”, “if you bomb a lesson, you pick up the pieces”; “nail somebody who is out of line”, “I’ve really been hammering it in their reading”, “why don’t we just hack away at it?”, “they stick to it like glue”, “throw out some alternatives at them.” His comment that “you know exactly where you are, and you know exactly what's coming up next” appropriately captures the sense that Grant’s construal of the curriculum places him in charge: “I like to stay on top of things.”

DISCUSSION AND CONCLUSION

Here I have explored an alternative way of thinking about curriculum theory by examining how a few teachers use metaphors when speaking about their professional work. By drawing attention to the difference between
curriculum-in-theory and curriculum-in-use, I argue that how teachers construe or define curriculum in relation to their practice is a significant phenomenon for curriculum theorists to address. Teachers' metaphors offer a novel approach to understanding how they frame curriculum within the context of their professional situations.

The illustrations themselves reveal various metaphors for construing curriculum. The language of two teachers, Alice and Bryn, presents curriculum content as a commodity, and so teaching becomes a conduit. To a large extent, this view of content is reflected in Ede's and Irene's dominant metaphor of the curriculum as something to be covered. For Irene particularly, the power of this construal is evident in her concern about time. It is almost as if the pressure to cover the curriculum has forced so much attention on time that time becomes a significant determinant of what she does in her classroom. The place of curriculum control differs in Grant's case. He talks as if he has control over the curriculum so that he may present a curriculum-in-use that he considers important. In contrast, the interviews with Chad and Mike offer little suggestion that content is as powerful a consideration as it is for Ede and Irene. Instead, Chad's and Mike's language indicates their more dominant concern for student learning. Chad appears to have reached this view by recognizing the obstacles that the course presents to students, and Mike by recognizing the institutional constraints of a penitentiary school.

The variety of frames for interpreting curriculum evident in these illustrations underscores the importance of asking where to place the study of curriculum theory. We can view the curriculum-in-theory, describing what is to be taught, distinctly from the curriculum-in-use, and the study of either is appropriate to curriculum theory. Yet the field is unlikely to satisfy us until we give some attention to whatever mediates between these types of curriculum. This analysis of metaphoric discourse points to the importance of determining how teachers frame curriculum and illustrates a method for beginning.

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