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Teacher Education and the Case Idea

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Some teacher educators are proposing and practicing "case teaching." Those proposals and practices center on cases: narratives and descriptions of teaching that were constructed specifically for use in a teacher's education. Typically, teacher educators or teachers write the cases, but sometimes they choose and adapt material from other literature such as research case studies. Occasionally, they ask student teachers to write cases that organize and reflect on their own experience, or apply educational theory to those experiences, or both.

Doyle (1990a) contrasts case methods both with propositions about teaching and learning and with opportunities to teach in laboratory or field settings, thus suggesting that case teaching is focused more on particular situations than on general principles, findings, and rules, but also that the student's encounter with those situations typically is vicarious rather than direct. While the encounter with cases is an indirect contact with teaching, it is not, however, passive. Work with a case typically is intended to draw the student into the situations, problems, and roles that are represented in the case. An engaging discussion of a case can become like role-playing or simulations, which sometimes are employed to explore cases.

In this report, we aim to survey the variety of cases, descriptions of case teaching, and arguments being made about case teaching in teacher education. At present, there is little research or theory specific to case teaching in teacher education; therefore, we will join the proponents and practitioners in looking at other literature that raises issues, questions, and possibilities.

A Sample of Cases and Case Literature

Case teaching has histories in several fields of professional education. Harvard University figures prominently in several of those histories; there, case teaching emerged in law in the 1870s, in medicine around the turn of the century, and in business in the 1930s (Doyle, 1990a). Proponents of case teaching for teacher education frequently argue by analogy to case teaching in other fields of professional education. Masoner (1988) provides an "audit" of the few studies of case teaching in several fields. Christensen's (Christensen with Hansen, 1987) book of cases and articles on case teaching, which grew out of experience at Harvard's Business School, is a valuable and frequently cited resource. Katherine Merseth (1991, 1992) often relies on analogies to case teaching in business education to construct and teach cases in preparatory teacher education. Kathy Carter has explored analogies to case teaching in legal education (Carter & Unklesbay, 1989). However, teacher education is not completely without its own history of case teaching. Doyle (1990a) notes a proposal for case teaching from 1864 and a report on the use of cases at New Jersey State Teachers College from the 1930s. McAninch (1991) mentions several predecessors, the earliest from 1925, for the casebooks published recently.

A systematic historical comparison of case methods in professional education would be both interesting and useful for teacher educators, but we have not undertaken that task. Rather, we have followed the maxims that the subject matters and the context counts. While occupational comparisons are useful, each occupation also faces a distinctive set of problems, employs ideas related to those problems, and constitutes a materially distinctive environment for case teaching. To some large extent, case teaching must be constructed or reconstructed for teacher education and its setting.

For the most part, the current literature for teacher education comprises cases, descriptions of case teaching, and arguments about the virtues and uses of cases. Beyond the common features described earlier–narratives of teaching constructed specifically for use in teacher education and used at a distance from actual teaching situations–case teaching encompasses considerable variation in the situations, actors, acts, thoughts, and feelings reported by the cases; the ways in which the case materials are organized; the media in which they are presented; the activities in which they are used; the ways in which teacher educators participate in those activities; the rationales given for case teaching; and the aims pursued.

Textbook Cases

Cases figure prominently in a series of teacher education textbooks from Teachers College Press (Feinberg & Soltis, 1985; Fenstermacher & Soltis, 1986; Phillips & Soltis, 1985; Strike & Soltis, 1985; Walker & Soltis, 1986). In the first chapter of their textbook on the ethics of teaching,

Kenneth Strike and Jonas Soltis (1985) offer a case in which a teacher finds that truth-telling and caring for children are not always easy to reconcile. In fewer than two pages of narrative with dialogue, they place an elementary school teacher in a recognizable dilemma. She stopped a fight between some boys.

For one of these boys, she thought, the fight was more than an incident; it was another sign of some kind of trouble that ought to be discussed with the boy's parents. In an interview with the boy's father, she began to fear that the father was violent and would do violence to the boy for his part in the fight. She heard herself describing the fight to the father in terms that might protect the boy but didn't fully square with the circumstances as she knew them. Thinking about the interview afterward, the teacher was distraught. Was the boy actually in danger? Even if he was, could she justify her fabrication of the fight?

Strike and Soltis (1985) then go on to report that one tradition in ethics strives to evaluate conduct in light of its consequences, while another strives to evaluate conduct in relation to universal principles or rules. The authors reflect on the case they have offered, suggesting how each moral strategy might be employed. This discussion exposes the different ways of reasoning and their respective difficulties, such as knowing or anticipating the consequences of a given act. Seemingly, Strike and Soltis anticipate that their readers may react to the difficulties of settling the case and deciding between the two ethical positions by retreating into mere personal preference. They propose to explore, in several chapters on ethical issues in teaching, whether "objective" arguments can be made on moral questions. Each of those chapters uses cases much like that described above. Two chapters at the end of the book provide a number of "cases" and "disputes" for thinking and discussion.

Casebooks

Several casebooks for teacher education recently have been or soon will be published (Greenwood & Parkay, 1989; Kowalski, Weaver, & Hensen, 1990; Shulman & Colbert, 1987, 1988; Shuman, 1989; Silverman, Welty, & Lyon, 1991). In their book of "case studies for teacher decision making," Gordon Greenwood and Forrest Parkay (1989) provide 30 cases that range from 4 to 10 pages in length and are grouped under the headings of curriculum, instruction, group motivation and discipline, pupil adjustment, and conditions of work. The authors say that the book presents "high-frequency teaching situations that have been constructed from survey data supplied by real teachers in six states regarding their 'most troublesome' and 'most enduring' teaching situations" (p. ix).

One of the cases on group motivation and discipline is "Two Different Worlds," 10 pages of narrative, dialogue, and data followed by a page of discussion questions. A new art teacher is assigned to teach mornings at one junior high and afternoons at another. The first school she finds to be welcoming, well equipped, well maintained, and well stocked with art supplies and the students compliant, cooperative, and motivated. The second school she finds forbidding, chaotic, run down, and poor, and the students noncompliant, uncooperative, and abusive to her and each other.

After three months, the teacher describes herself as being locked into a battle for control of her classes in the latter school; she is resorting to threats. A teacher from that school asks her how she "really feels" about her students. The discussion questions included with "Two Different Worlds" speak of school climate, handling confrontations with individual students,

intrinsic and extrinsic motivation, social and economic environments, teaching objectives in art and their propriety for different students, classroom management models, parental involvement, and self-fulfilling prophecies.

In their introduction, Greenwood and Parkay (1989) cast teachers as decision makers and propose a strategy for the decision making: Examine the situation and decide to deal with it, gather data about the situation, interpret the data, generate alternatives and choose among them, examine the decision for consistency and feasibility, then execute and evaluate the decision. They provide sample analyses–a "psychological analysis," a "behavioral analysis," and "an analysis based on classroom-management theories"–of a case titled "Joe Defies Authority." They want students to strengthen their theoretical knowledge by applying it to situations and to become more aware of their decision making.

Other authors also provide assistance in using cases. Silverman, Welty, and Lyon (1991) offer an instructor's manual with their case collection. Judith Shulman (1992) has assembled a volume in which several teacher educators present cases and discuss their use; in the same volume, Lee Shulman (1992) provides a discussion of pedagogy with cases.

Conversations, Preconceptions, and Videotape

Community and conversation are prominent themes in an introductory teacher education course that Tom Bird (1991) organizes around three videotapes of teaching. The tapes depict a direct instruction lesson on sentence writing for eighth graders, an open classroom for second and third graders, and a teacher-led mathematical discussion involving fifth graders. A transcript of an interview with one of the teachers and a journal article written by another provide contexts for the videotapes as well as access to the teachers' thinking. After the first viewing of each tape, the education students report and discuss their reactions in order to notice and begin evaluating the ideas about teaching that they brought with them to the course. The tapes provide much to talk about; some of the teaching shown on the tapes is likely to be familiar and appealing to student teachers, but other teaching is likely to be unfamiliar and vexing to the point that some student teachers declare that it is not teaching, or is not good teaching.

Bird matches each of the videotapes with an article or essay that raises an important problem of teaching, provides language for analyzing the videotape, and provides rationales for the teaching shown there. The student teachers study and discuss these articles intensively, often in small groups, with the aim of mastering the arguments well enough to use them to interpret the tapes, which they attempt to do after a second viewing. To promote interaction between their prior conceptions of teaching and the arguments they encounter in their reading, students write a "conversation" about each videotape, in which they employ three voices: "Myself as Experienced Student," "Myself as Inexperienced Teacher," and "Myself as [the author of the article being studied]." Within this framework of activities about videotapes, Bird pursues objectives such as challenging students' tendency to think of teaching only as telling, introducing students to arguments about classroom organization, and socializing prospective teachers to pointed discussions of practice.

In this instance, the cases employed are videotapes, found and adapted for teacher education, augmented by other material such as the interview with the teacher in one videotape, and brought into relation with foundational texts by means of a writing assignment designed for

that purpose. Such strategies for combining materials and activities in work with cases can become quite elaborate, as we will describe later.

Subject-Specific Cases: Mathematics

Cases can take all sorts of teaching problems as their subjects, and the recent rediscovery of the subject matter is reflected in the development of cases. Carne Barnett (1991) describes a project to develop cases for mathematics teacher education; its premise is that "good teaching requires highly developed subject-specific thinking and reasoning skills that allow teachers to quickly generate alternative strategies and evaluate those strategies, based on continually shifting conjectures about students' thinking, motivations, and beliefs" (p. 1). Barnett illustrates her argument by reporting on some conversations about the following case written by Kim Tolley, a classroom teacher:

> There's No One-Half Here!
>
> I had been using cube blocks with my fifth graders to demonstrate the concept of multiplying fractions such as $\frac{2}{3}$ x 6. First, I'd have students take six cubes and lay them on the table. Next, I'd ask them to divide their cubes into thirds. Finally, I'd ask them to pick up two-thirds of the blocks and be ready to tell me how many they were holding. After lots of practice, students could easily demonstrate the following types of problems:
>
> $\frac{3}{8}$ of 40 $\frac{3}{4}$ $\frac{1}{2}$
>
> $\frac{4}{5}$ x 32
>
> Several days later, I decided to use the cubes again to demonstrate problems like $\frac{1}{2}$ x $\frac{3}{4}$. I asked the students to take eight cubes and set them on the table. I asked them to pick up one-half of the cubes, which they quickly did. Next, I asked them to show me three-fourths of the one-half they were holding. Immediately, I sensed confusion everywhere.
>
> "Ms. Tolley, what do you mean, three-fourths of the one-half we're holding?" asked one girl. "We're holding four cubes, not one-half."
>
> This lesson seemed to parallel the other lessons so perfectly that I was surprised to encounter such confusion, especially with my above-average students. What was the source of their confusion? Weren't my directions clear? Should I have selected another manipulative for this lesson? (p. 8)

Barnett (1991) presents findings from discussions of this case with four groups of practicing teachers having a wide range of experience. As is common in case teaching, "the role of the facilitators was to pose strategic questions, press for analysis of alternative strategies and their consequences, and provoke challenges of opinions, ideas, and beliefs expressed by members of the group" (p. 8).

Barnett (1991) reports that four issues were prominent in all discussions of this case. Should the teacher have used a continuous model or a discrete model for fractions? What representations, other than concrete materials, could the teacher have used? Could the students have been confused by the teacher's language? Is it developmentally appropriate to teach multiplication of fractions to fifth graders? The facilitator's guide for this case, Barnett says, will be organized around those issues. Barnett reports that, even with inexperienced teachers who had limited exposure to professional development programs, case discussions were deep and rich with minimal input from the

discussion leader; she notes data suggesting that similar results are possible with preservice teachers.

Context-Specific Cases

While most published cases clearly are intended for widespread use, their relevance in a given teacher education program may, as we have seen in "Two Different Worlds," be defined by features of the situations they describe. Moreover, some cases are intended for particular contexts. Judith Kleinfeld (1992) is editing a series of cases written by teachers about particular problems of teaching in isolated Alaskan communities (Allen, 1990; Carey, 1989; Finley, 1988, 1990). These cases are centerpieces in a teacher education program, Teachers for Alaska, which Kleinfeld describes as a "problem-centered, case-based approach to teacher education" that has "done away with the traditional sequence of foundations courses followed by methods courses." Instead, students study and discuss problems and cases in small groups where "research, theory, and methods are introduced as such material becomes useful in understanding and dealing with the classic problems of professional practice." The program is organized in "thematic blocks" focused on "the dilemmas of teaching particular subjects to culturally diverse student groups."

The literature and literacy block is organized around such cases as "Malaise of the Spirit" (Finley, 1988), a case written by a teacher. This case runs to 50 single-spaced pages that draw the reader into the personal, professional, and instructional problems of an English teacher working in an isolated Alaskan community. One of Kleinfeld's aims in using this case is to absorb her students in a teaching situation for which, in many instances, their previous experience cannot have prepared them.

"Malaise of the Spirit" is a complex narrative, cast as the teacher's retrospection about his successful experience working in isolated Alaskan communities and his recent move to a new post, where things have not gone nearly as well as before, either in the classroom, or in relations with colleagues, or in the morale of the school. The first and longest part of the case describes a combination of problems that brings the teacher to a crisis in which he is, briefly, too distraught to work. The second part describes the thinking and the actions by which the teacher begins to improve the situation, both in his English class and in the school. The third part provides background information about the community and the school where the teacher works.

In using this case, Kleinfeld (1992) aims to give novices

> vicarious experience with the kinds of problematic situations characteristic of teaching, a model of how an expert teacher goes about framing and constructing educational problems, a model of how a sophisticated teacher inquires about and reflects on such problems, a stock of educational strategies for use in analogous problem situations, and a sense that teaching is an inherently ambiguous activity requiring continuous reflection. (pp. 34-35)

The use of cases in the Teachers for Alaska program continues to evolve. Regarding length of cases, it is worth noting that Kleinfeld (1992) also uses cases as short as a paragraph to foster discussion. The case topics vary as well. The literature and literacy block also employs a case of "censorship and selectivity," a case about teaching Native myth, and a six-part case that takes student teachers through the series of decisions that a teacher made in teaching *Hamlet* to diverse students (Kleinfeld, personal communication). The latter cases are intended to help student teachers to build their pedagogical content knowledge, their ability to teach

particular subjects to culturally diverse students. While Kleinfeld agrees that the cases described here are set in Alaska, she also argues that, as with literature, close attention to the particulars of good cases provides students with glimpses of the universal problems of teaching (Kleinfeld, personal communication).

Transition

As we have begun to describe (and will continue to do), case workers around the country are beginning to generate, test, and use cases of various sorts in teacher education. Strike and Soltis (1985) used cases to make distinctions in an ethics textbook and to support discussions in classes that use it. In their casebook, Greenwood and Parkay (1989) surveyed teachers to find and describe common problems that enable students to exercise their knowledge and to practice decision making. Kleinfeld (1992) works with teachers to construct a set of extended, first-person narratives that, among other things, immerse prospective teachers in difficult and unfamiliar problems of teaching in Alaska's rural villages. Bird (1991) tried to combine videotape, related material, and educational literature in order to set up an interaction between students' prior ideas about teaching and ideas they will encounter in their teacher education programs. Barnett (1991) works with teachers to portray problems in mathematical pedagogy and to work out the questions and procedures for fruitful discussions of those problems.

These projects raise a variety of questions. For example, around what conception of a case is development organized? Our opening description of teaching cases brought to surface a number of dimensions, including the medium, the genre, the length, whether the case is actual or contrived, and others. The choices here relate to the case developer's purposes and uses for cases as well as to theoretical hunches about learning from cases. Instructors may use extended, detailed narratives as centerpieces in courses, revisiting them repeatedly in conjunction with other material and experiences. Or, they may use many, brief vignettes in a course, spending little time on any one but building a pattern of understanding across multiple instances. The first use treats the case as a richly contextualized, multilayered account containing a variety of issues for analysis. The second treats cases as instances across which to build nuanced understanding of concepts, issues, or practices.

Likewise, some developers rely on videotapes as an essential case medium through which to portray vivid instances of instruction. The old maxim that a picture is worth a thousand words applies here: better to view a case of cooperative learning (and its vicissitudes) in action than to read an account of it. But written cases allow portrayal of problematic situations that cannot easily be captured on film, while providing simultaneous access through narrative to thoughts, feelings, and actions. One may suspect that emerging practice will combine materials: transcripts of videotaped instruction that intersperse the teacher's thoughts with the written record of the verbal interactions on tape.

The "case idea" harbors diverse materials, arguments, and possibilities. Proponents and practitioners of cases and case teaching pursue a variety of aims, construct cases on many topics and problems of teaching in different media, and use those cases in different ways. They hold different ideas about what prospective teachers should know or know how to do and about the kinds of conversations and reasoning into which they should be inducted. They would organize the curriculum of teacher education differently and would teach it differently.

Cases and the Curriculum of Teacher Education

Compared with the theory-into-practice idea that has been so prominent in teacher education, the case idea implies a shift in emphasis from the theories to the practices and a shift in genre from exposition to narrative. In these and other respects, the case idea might be counted as part of the broad "refiguration" of social thought (Geertz, 1981) in which teacher education has been participating. Educational work reflects a set of connected (and relative) trends, from a law-seeking to an interpretive aspiration in inquiry; from a concern for universal principle to a concern for particular relationships; from the positivistic stance of an observer on the scene to the pragmatic stance of the actor in the situation; from authoritative transmission to mutual exploration of knowledge; from conditioned behavior to meaningful action as a model for teaching and learning; from a cooler appraisal of teaching as knowledge and technique to a more passionate consideration of teaching as moral agency; from vision as a metaphor for knowledge to speech as the literal means for constructing meaning; and from lecture to conversation as the mode of interaction between professors and teachers.

There is ferment about what should count as knowing, about what should count as useful writing or persuasive conversation, and about what kinds of thinking should be respected. Teacher education participates in that ferment, and the teacher education curriculum is at issue. One question is, What topics, issues, aspects, or problems of teaching should prospective teachers study in the teacher education curriculum? The case idea does not bear directly on this question; as we have seen, cases do and could address many topics and problems in teaching. Another question is, To what modes of thinking and conversation about teaching should prospective teachers be introduced and inducted? The case idea has extensive implications here, which we will pursue.

Four kinds of conversation and reasoning might be desirable in teaching and teacher education; to use Soltis's (1990) term, these are four kinds of "community of practice" that might be organized about teaching. The first kind honors theory and treats teaching as a matter of applying theory to practice. In this community, cases appear as instances of theory. The second kind also is concerned with the relation between theory and practice but reverses the emphasis; this community assigns priority to the situated problems of practice and employs abstractions in the course of action on those problems. In this community, cases are problems for deliberate and reflective action.

The third kind of community relies on stories and other narrative modes of knowing and communicating; community members enact, tell, recall, and ponder stories about practice. Here, cases are literature, as well as a kind of knowledge that theory cannot supply. The fourth kind of conversation resembles the tradition of moral casuistry; members of the community reason from case to case by analogy–without resort to theory. Here, cases are a body of knowledge in themselves.

These differences among conversations, communities, and their use of cases raise questions about the character of cases in teacher education. What is a case of teaching? How do teachers work on a case? What do case materials provide, if anything, that other curriculum materials do not? Where and how would cases appear in a teacher education curriculum? Why would teacher educators employ them?

Foundations for a Profession of Teaching

The incumbent kind of conversation and reasoning in teacher education might be called "foundational," as in "the foundations of teacher education." Where the normal school curriculum had emphasized subject-matter knowledge and uniform methods of teaching, college and university teacher education programs since the 1940s increasingly emphasized the importance of "foundational" disciplines. They rejected what they regarded as technical training in favor of a more academic program that would prepare "practitioners who were as theoretically informed as practitioners in other professions" (Tozer, Anderson, & Armbruster, 1990, p. 294). The community for teaching and teacher education would be a professional enclave, modeled on more prestigious occupations including medicine and law. Its core knowledge would be theoretical and scientific and would govern practice. That aspiration has extended to include the body of research on teaching produced in the last two decades.

We note that the term "foundation" has a number of related meanings. Within the branches of philosophy that treat problems of knowing and valuing, the term refers to some set of first principles, assumptions, or methods upon which may be erected a system of knowledge and values. Within teacher education, the familiar division into "foundations" and "methods" courses reflects a distinction between discipline-based perspectives on the history, aims, social and cultural contexts of schooling versus general and particular methods of instruction. These two usages share a conception of the relation of theory to practice that sees the latter resting on or derived from the former. A "foundational" approach to teacher education organizes the enterprise in terms of "applying" theory to practice, where "theory" might include various conceptions of the aims of education or methods of instruction derived from conceptual and empirical work in cognitive psychology. The notion of a foundational approach to teacher education, then, includes both the curricular division into the two types of courses and an epistemological stance toward the theory-practice relationship that is represented in both "foundations" and "methods" courses.

Generally, the foundational approach claims priority for knowledge that is general, propositional, and organized along the lines of the foundational subdisciplines–the psychology, history, philosophy, and sociology of education. In the typical program sequence for teacher education–foundations, methods, and practice–prospective teachers are expected to become familiar with the concerns and vocabularies of theorists and researchers before they turn to the practical problems of the occupation that they want to enter; they are expected to learn the theoretical parts of teaching before they address its problems as practical wholes.

Moreover, teaching methods tend to be treated as prescriptions for, rather than descriptions of, practice; these prescriptions are developed with the aim of replacing existing practices (Doyle, 1990a). Confidence in a theoretical or scientific approach to teaching has combined with concern about or contempt for common current practice to generate a missionary outlook among teacher educators; they are likely to perceive that their task is to lift the dead hand of the past, overcome the folklore of teaching, and break the continuity of traditional practice. One consequence has been "neglect, if not devaluing, of both context and the common forms of schooling in building a body of knowledge about teaching" (Doyle, 1990b, p. 348).

Some teacher educators now propose to modify the foundational idea so as to deal more adequately with situated practice. In their introduction to a recent symposium on

foundational studies in teacher education, Tozer, Anderson, and Armbruster (1990) report that

> many of the articles explicitly criticize contemporary practices in foundations of education for their persistently inadequate integration of foundational theory and knowledge into teacher education programs. . . . Nearly every article in this volume responds to that perceived inadequacy by arguing for attention to the practical contexts of teaching as a guide to integration of research knowledge and theory into the teacher education curriculum.
> (p. 296)

While those criticisms and arguments might be interpreted as a limited call for better curriculum design, instruction, or use of practice work, in the context of the symposium they are more basic.

The authors included in the symposium seek alternatives to the metaphor of foundations for teaching; they want a different conception that "assumes not a primary but instead a complementary role for the study of mind and culture" (Tozer et al., 1990, p. 296). In their rethinking of foundational studies, they appear to be moving from a conception of the psychology, history, sociology, and philosophy of education as the bases and sources for practice to a conception of those subdisciplines as resources for dealing with practice, or as useful ways to talk about practice. They present the initial and continuing education of teachers as a "dialogue" (Peterson, Clark, & Dickson, 1990) or conversation in a "community of practice" (Soltis, 1990) or in a "community of learners" (Leck, 1990). That community might eventually harbor a "consensus of the learned" that forms around "paradigm cases" of practices (Broudy, 1990). Short of that consensus, the members of this community of practice would share "common language, concepts, and interests," which it uses to discuss cases of practice (Soltis, 1990).

Some of the participants to the symposium suggest or assert that schoolteachers bring more to a conversation with professors than a need to know what principles to follow or a need to have their work interpreted for them. Rather, they present teaching practice and teaching problems as an independent domain of situated action, in which teachers can construct "classroom knowledge" (Doyle, 1990a) and accumulate "wisdom of practice" (L. Shulman, 1987, 1990) that deserves respect in its own right. Doyle is explicit that such knowledge is "event-structured" knowledge or case knowledge; he asserts that such knowledge ought to be accumulated, studied, and taught as "the core foundation" of teaching. He says that "All other disciplines have utility for teaching as resources in the continuing development of classroom knowledge" (Doyle, 1990b, p. 358).

While the symposium contributors retain their conviction that the psychology, history, sociology, and philosophy of education are defensible, enlightening, persuasive, and useful ways to talk about practice, they also are assigning greater epistemic, psychological, and social weight to schoolteachers' experience, thought processes, and know-how. They want to integrate the foundational subdisciplines both with subject matter knowledge and with classroom knowledge.

Cases as Instances of Theory

While we have highlighted some current discontent with the foundational approach to teacher education, it remains firmly institutionalized in the division of courses into "foundations" and "methods" and in the dominant mode of conceiving and enacting the theory-practice connection. Within this mode, some cases fit comfortably for they constitute the particular representations of "practice" to which theory is applied; for example, recall the "Two Different Worlds" case from Greenwood and Parkay's (1989) casebook, described earlier. One approach to cases in the curriculum, then, consists of the interweaving of theoretical material, in the form of course readings, lectures, and other presentations, with cases. The instructor leads a discussion whose aim is to apply the theoretical ideas to the case particulars to illuminate the case by the light of theory. Case discussion serves to extend, test, and consolidate students' knowledge of theory, which is accorded pride of place due to its broad explanatory or interpretive power.

Within this mode of curriculum organization, a single case might instantiate two or more theoretical perspectives that might conflict or compete, be compatible, or simply draw attention to different features of the case. Within the foundational approach, a key design decision is the selection and sequencing of theoretical material with cases, to promote what L. Shulman (1986) refers to as "strategic understanding," the wise application of knowledge to situations where principles conflict and no simple solution is possible. Through skillful curricular arrangement, instructors may cultivate strategic knowledge in students while exploring the problematic nature of applying theory to practice, in cases where theories present conflicts, trade-offs, or dilemmas, and where theories are silent, multivocal, or ambiguous. The foundational approach to cases does not presuppose any tidy correspondence between theory and cases but aims to cultivate analytic skills in the application of ideas and to convey theoretical knowledge in a form useful to the interpretation of situations, the making of decisions, the choice of actions, and the formation of plans and designs.

"Theory into practice" is a versatile curricular principle that may be employed in both methods and social foundations courses. For example, in a reading course, students might review case profiles of students, such as those rendered by Bussis, Chittenden, Amarel, and Klausner (1985), then discuss the pros and cons of using particular theories of literacy with the presenting "cases." Or, in a "school and society" course, the instructor might first acquaint students with contending theories of social justice, comparing for example the work of John Rawls (1971) with that of Robert Nozick (1974) or others, then supply written cases that present justice-oriented issues in education such as the policy of affirmative action, the financing of schools, or a proposal to expand parental choice of schools. Case discussion examines such issues from the perspective of the contending theories, but the aims of instruction may also include helping students to clarify and justify their own views about social justice, in addition to learning to apply theory to practice.

Pragmatic Action and Deliberation

To this point we have used the familiar phrase "theory into practice" to indicate a common view of the relationship. But this formulation is just what the antifoundationalists have criticized; for some, the case idea provides one useful corrective. They resort to an indigenous tradition in education that makes use of theory but grants pride of place to case particulars. The pragmatic tradition, with its distinctively American roots in the writing of Pierce, Mead, James, and Dewey (see Scheffler, 1974) and its contemporary extensions in the work of Richard Rorty (1979, 1982) poses a challenge to the basic assumptions of unreconstructed foundationalism.

For our purposes, the pragmatic tradition might be traced to The Quest for Certainty, where John Dewey (1929) posed a problem that arises when abstractive studies become disconnected from concrete situations and alternatives for action in those situations. Dewey argued that "objection comes in . . . when the results of the abstractive operations are given a standing which belongs only to the total situation from which they have been selected. All specialization breeds a familiarity which tends to create an illusion" (p. 173). Like Dewey, Joseph Schwab (1978) regarded the social sciences as providing our "fullest and most reliable knowledge" about various aspects of education, but he also pointed to a tendency for abstractive work to tear practical situations apart:

> In the course of . . . readying a subject of scientific, or theoretic inquiry, the principles which distinguish it from the whole tend to confer on the partial subject an appearance of wholeness and unity. The connecting and entwining threads which originally made it one aspect of a larger whole are smoothed down and covered over. . . . The bodies of knowledge are themselves separated, each couched in its own set of terms. Only a few terms of each set have connections with terms of another set. Hence, the bodies of knowledge that we inherit from the behavioral sciences are, taken separately, only imperfectly applicable to practical problems, problems which arise in the whole web of the original complexity. (p. 330)

Important connections disappear in abstractive work, Schwab argued; in his proposals for "eclectic arts" and "practical deliberations" on particular problematic situations (cases?), he was trying to construct a program to restore those connections.

Pragmatists also have sought to correct what they perceived as an amoral tendency in social science, the drive to purge disciplinary vocabularies of terms carrying moral significance. Dewey argued that "the problem of restoring integration and cooperation between man's beliefs about the world in which he lives and his beliefs about the values and purposes that should direct his conduct is the deepest problem of modern life" (Dewey, 1929, p. 204). In the effort to become scientific, Rorty argued, the social sciences have pursued a futile and misleading objective. In contrast, he proposed two requirements for the vocabulary of the social sciences. First, it should contain "descriptions of situations which facilitate their prediction and control." Second, it should contain "descriptions which help one decide what to do" (Rorty, 1982, p. 197). This second criterion necessarily introduces moral considerations and judgments into social science accounts.

Cases as Problematic Situations

Alike, Dewey (1929), Schwab (1978), and Rorty (1982) sought to deal with problems of illusion, partiality, distortion, and amorality in abstractive work by restoring situated problems of practice to a central position, by taking up the stance of the actor in the situation and by treating research findings, theories, and principles as part of the actor's equipment. The confrontation with problems of practice–with cases–would force a reconnection between moral and other arguments. Likewise, that confrontation would tend to expose the partiality and distortion of the various theoretical arguments that might be made about the problem, and so provide a corrective for academic illusion.

The pragmatic stance alters the interplay of theory and cases within curriculum in subtle but important ways, for now the case serves as the basic unit of deliberation and action, while theory supplies useful but limited and fallible tools for work on cases. The aim of instruction shifts from applying theory to practice to acting, reflecting, deliberating on problematic situations with the aid of various theories. In work with cases, students do this vicariously.

Through case deliberations students develop a proper appreciation for the value of theory, learning its uses in wise, self-reliant ways. The flow of practical deliberation moves back and forth, revealing aspects of the case from the perspective of theory and exposing the limits, lacunae, biases, and interconnections of theory in its encounter with cases. Within the pragmatic mode the case becomes the primary focus of curriculum, and the artful construction and arrangement of cases becomes the central act of curriculum development. This contrasts with a foundationalist approach that begins with theory, then selects cases (if at all) as an afterthought, as merely the material upon which to practice the application of theory.

Some researchers have begun to explore how to select and sequence cases for purposes of generating or testing generalizations. For example, Collins and Stevens (1982) have analyzed transcripts of inquiry teaching to understand the interplay of cases in instruction, where the cases are examples or instances rather than extended written or video texts. Their work brings to the surface the tactics teachers use in selecting and sequencing particular types of example (e.g., positive and negative exemplars, counterexamples, hypotheticals), but as yet investigators have paid little attention to larger patterns of instruction with cases.

The selection and sequencing of cases, together with tactics for interweaving presentation of principles and theory with case activities and other elements of teacher education, present a complex curricular issue. Some current uses are quite conventional in presenting written cases for discussion in university-based courses. Other approaches, however, use cases in conjunction with field experiences to focus reflection on issues that emerge in novice teaching (Florio-Ruane & Clark, 1990). If cases are themselves devices for situating knowledge, so are they variously situated in relation to other instructional activities, but the principles for such coordination have yet to be worked out. For example, advocates argue that cases can present subject-matter knowledge in the context of teaching and so help acquaint students with pedagogical perspectives on subject matter knowledge (e.g., see Barnett, 1991; and Wilson, 1992). But students may engage with such cases in university classrooms, in encounters with supervising teachers, in interaction with their initial forays into classrooms, and elsewhere.

The thoroughgoing integration of case with theoretical material may help both to relieve the argued shortcomings of the foundational approach and to abet the pragmatic program, for cases may be vehicles for representing classroom knowledge and problems directly in the curriculum of teacher education. Cases, though, might serve other purposes than to make the theory-practice relation.

Narrative Knowing as a Natural Kind

The recent writing of Jerome Bruner (1985, 1986, 1990) describes a bold project to rebalance if not reorient the study of mind; if accepted, his proposals would have substantial implications for discourse in a community of teaching practice. Bruner proposes two fundamental modes of knowing that he labels the "paradigmatic" and the "narrative," associated respectively with science and with humanism. The paradigmatic mode refers to the logico-scientific enterprise in the Western tradition and encompasses the disciplines of logic, mathematics, and the sciences. "The imaginative application of the paradigmatic mode," he claims, "leads to good theory, tight analysis, logical proof, and empirical discovery grounded by reasoned hypothesis" (1986, p. 98). The foundational approach to teacher education, we note, is largely based on paradigmatic knowing, as Bruner describes it, and leads naturally to the formulation of applying theory to practice. By contrast, the narrative mode deals in good stories, stirring drama, and richly portrayed historical accounts.

Bruner argues that each mode constitutes a natural kind of knowing that cannot be reduced to or subsumed by the other. Each has its own operating principles, criteria, and procedures for establishing truth, but their aims are fundamentally different. In the paradigmatic mode, one seeks to know the truth by establishing causal relations. In the narrative mode, one pursues questions of human intention or the meaning of experience. Science making and narrative making each constitute ways of constructing the world:

> Science creates a world that has an "existence" linked to the invariance of things and events across transformations in life conditions of those who seek to understand. . . . The humanities seek to understand the world as it reflects the requirements of living in it. In the jargon of linguistics, a work of literature or of literary criticism achieves universality through context sensitivity, a work of science through context independence. (Bruner, 1986, p. 50)

Bruner is but the most prominent of a wide range of social scientists studying the role of narrative in inquiry and in human affairs (for a brief review, see Connelly & Clandinin, 1990). He argues that until recently psychology, beguiled by the cultural authority of science, has concentrated on paradigmatic ways of knowing while ignoring the central role of narrative in human affairs. His perspective leads to study of the interaction between individual readers, with their different histories, and texts rendered in a variety of communal genre. He urges the social sciences, psychology in particular, to take up study of narrative knowing, concentrating on the "dual landscapes" of action and of consciousness–what those involved in action know, think, or feel. He would explore, for example, how elements of genre influence interpretation. Drawing on contemporary literary theorists, Bruner describes how texts recruit the imagination of the reader in constructing a "virtual" text in response to the actual. "Literary texts initiate 'performances of meaning' rather than actually formulating meaning themselves" (Bruner, 1986, p. 25).

These ideas have several implications for the curriculum of teacher education. They clearly provide broad theoretical support for learning through engagement with narratives. They call into question the lopsided attention in teacher education to paradigmatic modes that seek, in the name of "effectiveness," to convey scientifically validated rules of practice to aspiring teachers. Rather (or also), these ideas suggest, teaching is an hermeneutic act that requires skills of interpretation and analysis, skills that may be developed through encounters with narrative. Any situation in teaching is open to interpretation from multiple perspectives, using multiple frameworks composed of concepts, ideas, and values; teacher educators aim to help novices to extend and enrich their ways of seeing life in classrooms. Well-wrought cases supply texts for such analyses that include the interior perspectives
of actors in the situation together with accounts of their actions.

Cases as Literature

Bruner's work also raises questions about the nature and use of cases, for he draws attention to the literary properties of texts and their effects. If cases are to provide opportunities for interpreting human intentions, then elements of genre may come into play, and poems, novels, or short stories may have unique value. So it is not simply any narrative that fascinates Bruner, but rather literary texts whose indeterminate "meaning" invites, even requires, the reader to "write" the text–that is, to render an interpretation.

Case advocates (e.g., Kleinfeld, 1990, 1992; Merseth, 1991, 1992) have noted the virtue of texts that can be revisited repeatedly to deepen understanding and to develop alternative views. The instructional value of such cases rests on their verisimilitude or lifelikeness. Many proponents of case teaching will use only cases drawn from actual situations, and they strive for compelling lifelikeness in the writing. However, Bruner and his colleagues are careful to note that

> literature is not quite life, and the procedures for the interpretation of intentionality in texts and in human interaction may differ in some important ways. In other words, where we say that an action means such and such and that a text means such and such, we invoke two different notions of meaning–and it is not yet clear how different they are. (Feldman, Bruner, Renderer, & Spitzer, 1990, p. 3)

Narratives provide powerful advantages in simulating and representing complex, multidimensional realities; reading and discussing rich narratives of teaching in relative tranquility may help prospective teachers to gain the understanding they need in teaching. At the same time, if teacher education is to prepare for action as well as thought, then novices must gain direct experience. Writing cases, as we will discuss later, might help them to make sense of action situations, as simulations may help them to learn how to act in those situations.

The work of Bruner and his colleagues indicates that literary properties of texts influence their interpretation by the reader–or learner. Bruner emphasizes how literature uniquely conveys the interplay of the inner world of the protagonists–conscience and consciousness–with the outer world of action and events. Some initial experiments (see Bruner, 1986; Feldman et al., 1990) demonstrate that properties of text do shape interpretation. When students read different versions of the same short story–the original and an altered version that lacks figures of speech and terms dealing with mental state–subtle but unmistakable differences emerge in the interpretation of intentionality. The storyteller's art, this exploratory research suggests, stimulates the imagination of the reader in ways surprisingly measurable.

The significance of narratives and learning from narratives may depend, then, on artful, literary uses of language. In particular, as one experienced teacher educator speculated, literary texts may serve best in developing an appreciation for the moral dimensions of teaching, for literature situates moral dilemmas in the larger contexts of character and culture, while provoking strong emotions in response to matters of value (Florio-Ruane, personal communication). How, for example, might a teacher educator provoke not only an intellectual understanding of educational inequity, but a sense of outrage and the resolve to respond? We read literature for many reasons, not least for arousing our passions, for discovering our values, and for understanding the human condition outside the narrow confines of our own experience. Such purposes, and materials that serve them, have a place in the education of teachers.

The influence of the genre-related aspects of cases has several implications. Case writing might systematically incorporate the "dual landscapes" of consciousness and action, and teacher educators might be encouraged to produce "literary" narratives. Alternatively, teacher educators might rely more often on literature to supply broad perspectives on educating; there are certainly many texts to choose from if the aim is to illuminate the lives of children, to explore issues of character and morality, or to understand the social and historical milieus in which teaching takes place.

Bruner suggests that narratives are not simply occasions for deploying paradigmatic knowledge, as foundationalists might construe it, but constitute in themselves a kind and form of knowledge worthy in its own right and on its own terms. Is it stretching his point to claim a place for such knowledge in teacher education? Do we really mean that teacher candidates might read poems as part of their preparation to teach? Literature currently has little place in professional education, but the psychiatrist Robert Coles is famous for his literature-based courses in Harvard's Schools of Law, Medicine, Business, Divinity, and Education (for a description, see Coles, 1989). Literary narratives supply unique access to some of the most profound matters confronting human beings; they have a place in teacher education, and the case idea might embrace literary as well as other texts.

Casuistry: Case Reasoning Independent From Theory

The narrative mode is not the only alternative to a paradigmatic procedure of theory-into-practice. Advocates of the case idea have not overlooked the fact that moral philosophy harbors an ancient tradition of reasoning from and with cases– without resort to theoretical principles. Here we will again encounter "paradigm," but in a quite different sense. Casuistry is a method of reasoning about problems of moral conduct by considering precedents: cases that tend to command attention whenever a particular kind of moral problem arises. Such precedents are called "paradigmatic cases" or "paradigm cases."

Faced with a new situation or problem, the casuist undertakes a careful exploration of the features of the case, in relation to paradigm cases, particularly noting exceptional circumstances such that precedents either apply ambiguously or conflict with one another, making a resolution difficult. Such reasoning requires and is supported by knowledge of the tradition or history of the issue as represented in the precedent cases. This approach to practical reasoning drew support from no less an eminence than Aristotle, who regarded practical wisdom as flowing from the

particulars of a present case to a provisional resolution grounded in precedents but subject to rebuttals based on exceptional circumstances. Aristotle
regarded ethics not as a science but as a practical matter calling for informed prudence.

In Jonsen and Toulmin's (1988) history of casuistry, this venerable mode of moral reasoning was disgraced in medieval times by corrupt French clerics who resorted to selective use of precedents and to tortured analogies among cases in order to justify ecclesiastical favors for wealthy patrons. Jonsen and Toulmin argue that it was not the method itself, but its misuse by a corrupt community, that gave a bad name to casuistry. That history invokes a thoroughly contemporary problem. If, as Dewey (1929) and Rorty (1979) have argued, epistemology's long "quest for certainty" has not paid off in universal rules for discerning truth, then much depends on the communities of inquiry: "There are no constraints on inquiry save conversational ones–no wholesale constraints derived from the nature of the objects, or of the mind, or of language, but only those retail constraints provided by the remarks of our fellow-inquirers" (Rorty, 1982, p. 195).

Conversely, when there is no prospect of effective criticism–bracing remarks–then survey data, short stories, and case reasoning all can be distorted. Much depends on having a community of practice that cultivates a "critical consciousness" (Geertz, 1981) about the modes of inquiry–including case discussion–that it employs.

In the Enlightenment period, the corrupted practice of casuistry provoked a stinging attack by Blaise Pascal. Subsequently, moral reasoning followed his lead in seeking foundational principles that might form axioms in a moral geometry. Moral reasoning would resemble rigorous deductive logic, following the sequence from major and minor premises to a necessary conclusion about a present instance. But that project did not pay off either, argue Jonsen and Toulmin (1988); rather, the effort to establish a rule-based science of ethics crucially misdirected the field of moral philosophy for several centuries. High time, they reckon, to resurrect a worthy method from the dustbin of history.

Cases as a Body of Knowledge

Modern casuists have explored such classic problems as what constitutes a "just" war (Walzer, 1979) or the circumstances under which lying or secrecy are morally permissible (Bok, 1978, 1983). And policy analysts (e.g., Neustadt & May, 1986) have proposed similar methods of reasoning by analogy from historical cases to present instances of foreign and domestic policy, seeking to systematize lightly the uses of the past for current policy deliberations. Their practice might suggest how teacher educators could approach cases. Jonsen and Toulmin (1988) note that "one indispensable instrument for helping to resolve moral problems in practice . . . is a detailed map of morally significant likenesses and differences: what may be called a moral taxonomy" (p. 14, emphasis added).

In her book on lying, for example, Sissela Bok (1978) provides a taxonomy that distinguishes the following types of case: "white" lies, excuses, lies in a crisis, lying to liars, lying to enemies, lies protecting peers and clients, lies for the public good, lies to the sick and dying, paternalistic lies, and deceptive social science research. This list suggests the range of cases within which the temptation to lie is strong and for which justification may be thought to exist. Her analysis of lying proceeds case by case; rather than arguing from biblical injunctions, Kantian categoricals, or other general principles, she explores the significance of special circumstances that differentiate the case types.

In its developed form, then, casuistry comprises a tradition of discourse about a high-stakes moral issue that is embodied in and bounded by a differentiated set of paradigm cases. These paradigm cases command attention whenever the issue arises, but their application to current issues may be problematic, because each case contains peculiar aspects. In this mode of moral and practical reasoning, the individual does not resort to general principles, but to a developed taxonomy of the morally relevant differences and similarities among the cases. Crucially, the casuist does not wrestle with cases alone. The voice of conscience harkens to its root meaning: con-scientia or "knowing together." Knowledge of the tradition of cases and participation in the community that practices reasoning by cases is a vital cultural resource.

Is the model of casuistry applicable to reasoning in teaching? What would constitute enduring, delimited problem domains equivalent to the moral issues of lying, war, usury, or others? What might emerge as paradigm cases that command attention as each uniquely situated problem of teaching arises? Broudy (1990) and his colleagues are working to develop cases that qualify as paradigms, at least to the extent that they are clearly recognizable and recommended by practicing teachers as central and recurring problems of their work. By virtue of their own surveys of teachers, Greenwood and Parkay (1989) claim similar status for the entries in their casebook. Neither project, however, takes up casuistry's machinery of taxonomies and reasoning by analogy.

Transition

We have sketched four kinds of conversation and thinking that might go on in a community of practice for teaching and therefore in a teacher education program. In the foundational mode, the members of that community emphasize social science knowledge and seek to apply it to practice; cases appear as instances of theory, if at all, and are peripheral equipment. In the pragmatic mode, the members of the community emphasize situated problems of the practice; they explore these problems by way of action, employing abstract knowledge as a useful but limited resource in their reflections and deliberations. Cases are central to this discussion.
In the narrative mode, the members of that community are storytellers who share tales of practice and speak of the insight they offer about intention, action, and its meaning to the actors. The members draw on the stories they have heard to act out stories to be told. In the casuistical mode, the members of the community share a tradition of influential cases and a taxonomy of important similarities and differences among those cases that together embody their ongoing concerns. The members of this community speak of resemblances between the traditional cases and the case at hand, seeking a prudent resolution that may in its turn be added to, or even alter the significance of, the developing tradition of cases.

We might treat this array of conversations and reasoning as an occasion for choice: Which is best, soundest, most useful? Before choosing however, we should consider that teacher education did, in effect, make such a choice in this century. The consequent complaint is that teacher education has overinvested in the foundational mode, in the stance of the observer over the stance of the actor, and in a dominant substantive account of teaching–the psychology of learning. While teacher educators might wish to speak more uniformly, so as to speak more authoritatively, a choice among modes might not be prudent. Exploration seems to be in order.

Each of the four modes of conversation, reasoning, and action discussed above puts case development in a different light and so suggests possibilities for exploration and development work. Case development depends on the context of use and on the part cases will play in the knowledge of the field. Cases might be employed within the foundational approach, expanding the array of examples already used in the teacher education curriculum as it is currently organized and taught. But in the pragmatic, narrative, and casuistic approaches, the cases would be regarded as knowledge in themselves, and would provide not only the backbone but also much of the body of the teacher education curriculum. The differences among the approaches provide a great deal for case developers to consider.

Developing Cases for Teacher Education

Three important matters arise in constructing a teacher education curriculum that employs cases. First, what is a case or what does a case represent? In some accounts, cases describe situations that a knowledgeable person can work on or that a person who is gaining knowledge can work on for practice. Knowledge is outside cases and is brought to bear on them. In other accounts, cases represent knowledge or constitute knowledge in themselves; a person can gain or construct knowledge from working with them.

Second, why is a case significant in a community of practice for teaching? How are cases specified theoretically and related to other cases or to other knowledge? What devices either organize cases as a body of knowledge or tie them into a body of knowledge for teaching? In what account or conception of teaching do the cases reside? In a casuistic approach, cases constitute a body of knowledge that is organized by analogies among and taxonomies of cases. In a foundationalist approach, cases have meaning within, and are organized by, distinct bodies of theory. Third, what understandings of and conventions for using cases enable a community of practice to employ them fruitfully? How do the members of that community know what to do with cases?

If knowledge and meaning are constructed, co-constructed, and negotiated, then those three matters are inseparable. What a case is, or is a case of, depends on the ideas used in constructing it and the purposes for doing so. The case resides in something akin to a culture, of which it is a tool. A case would have shared meaning and value in the context of its joint use by members of a community, and would be bound up in their interactions, relationships, and understandings of what they are doing. In case teaching as in school teaching, the entangling of these issues shifts attention from discrete variables of activity to larger patterns of activity–routines, practices, and designs–that incorporate the substance of the case, the larger pattern of meaning in which it is significant, and the communal activity in which it is used.

Walter Doyle (1990a) has proposed three "frameworks for using cases in teacher education" that associate the first two issues–the substance of cases and their place in a body of knowledge–and have implications for the third. He labels those frameworks "precept and practice," "problem-solving and decision making," and "knowledge and understanding." We will use Doyle's labels to organize this section of the chapter, examine his account of each of the three frameworks, and call attention to the third issue of conventions in a community of practice.

Precept and Practice

Doyle (1990a) argues that most teacher education employs a framework that he calls "precept and practice," in which teachers are given information that is presumed to have practical applications and then are assisted to practice using it. This knowledge comprises both "propositions from basic disciplines" and "maxims, aphorisms, and tips distilled from practical experience." Teaching is regarded as a process of applying rules or skills; to learn to teach, one learns the rules and skills and then practices applying them.

In this framework, cases are "rhetorical devices" used to clarify precepts and make them interesting. The function of the case, which may be as limited as an example in a text or as extended as a 45-minute videotape, is to exemplify the desired principle, theory, or instructional technique. Cases–instances of practice–are models to be emulated (or avoided). "Within this theory of practice," Doyle argues, "cases are hardly an essential component of teacher education" (1990a, p. 10). Cases come into their own, he argues, when learning to teach is regarded as a matter of learning to recognize and solve problems that arise in the classroom or as a matter of acquiring "classroom knowledge" needed to enact particular components of the school curriculum.

Other teacher educators might wish to argue with Doyle (1990a) here, on the grounds that his account of case teaching is entangled not only with his argument for the value of teachers' classroom knowledge but also with a polemic against renditions of "theory into practice" that are simplistic, narrow, or oblivious to context. A sophisticated foundationalist might wish to use cases in a "precept and practice" mode because it is not easy to exemplify any substantial proposition, whether theoretical or aphoristic, particularly if the aim is to have students apply that precept with due regard for its limitations, for the relevance of other precepts, and for the unavoidable complications of context in every application. Such an interest in cases would further increase if the aim is to convey a "precept" that itself is a complex network of propositions that has been applied in a complex system of instruction like groupwork. In this instance, cases might help both to convey that the context of application matters and to suggest how the network of underlying propositions may be resolved in any particular application of this class of instructional designs.

In Doyle's (1990a) account, "precept and practice" is a matter of transmission from those who know better to those who do not. While he does not actually mention lecture halls and passive students, they do come to mind. Lee Shulman (1992) explicitly invokes that image in suggesting that case proponents are trying to cast out the "twin demons of lectures and textbooks." However, he also provides persuasive examples to show that there is no necessary relation between cases as material for teaching and the discussion method of teaching. He reports that both James B. Conant and Joseph Schwab aimed to change the representation of science to undergraduates, in Schwab's terms, from a "rhetoric of conclusions" to a "narrative of inquiry"; but Conant used cases in a lecture series and Schwab used them in Socratic dialogue. There is room to explore how cases combine with various approaches to instruction.

Teacher educators using the precept and practice approach well might prize particular cases because they vividly portray teaching (or educational research) as a "narrative of inquiry," or validly exemplify given conceptual distinctions or educational designs, or reliably raise particular theoretical issues or applications, or consistently place students in particular moral or technical dilemmas, or typically promote lively discussion among student teachers. Conceptual and empirical work will be needed to establish these properties of particular cases; studies like Bruner's work on the literary properties of narrative may provide more general guidance for case construction.

Problem Solving and Decision Making

A second framework for using cases Doyle labels "problem solving and decision making." For Doyle, this framework is shaped by the "emphasis on cognition in teaching," which has "called attention to the complexity of the process of learning to teach and to the intricate processes involved in connecting knowledge to situations" (1990a, p. 10). In this approach, cases present some range of problematic situations within a general class such as "management and discipline."

Citing L. Shulman, Doyle (1990a) calls these cases "precedents," in that a case

> exemplifies not only how a lesson was conducted but also what the problematics of the performance were. As a precedent a case is a more complex and less well-formed representation of an instance of teaching than an example or demonstration model. (p. 10)

Such cases are likely to represent "an actual instance of practice presented in much of its complexity, rather than an episode constructed to illustrate a point" (p. 10). With such cases, students can practice such professional skills as interpreting situations, framing problems, generating various solutions to the problems posed, and choosing among them.

Problem solving with casebooks. Commercially produced casebooks (for example, Greenwood & Parkay, 1989, and Kowalski, Weaver, & Hensen, 1990) take a problem-solving and decision making approach, at least to the extent that they present problems for students to work on. The cases are argued to be "real" problems by virtue of the interviewing and surveying techniques used to develop them. In light of Doyle's discussion, we might ask whether cases bring out the "problematics" of the performance. McAninch's (1991) reaction to the casebook by Kowalski, Weaver, and Henson (1990) is that "most of the cases reduce potentially significant concerns about teaching or schooling to narrow instructional issues or 'sticky situations' in dealing with colleagues, parents, and administrators" (p. 346).

She argues that the "text supports an intellectually narrow view of the teacher as a receiver of knowledge who must then apply that knowledge to technical problems in order to reach decisions" (p. 347). She is disappointed that this casebook's list of suggested readings–which presumably contain the knowledge that prospective teachers were to receive–were most often popular journals rather than scholarly and theoretical outlets. Regarding Greenwood and Parkay's (1989) casebook, McAninch (1991) notes that the authors conceive of teachers as decision makers who use a variety of sources of knowledge, including theoretical and personal knowledge, but suggests that "it is never made quite clear how those different types of knowledge play out in actual decision-making (p. 348). She notes their proposal for a six-step decision-making strategy, but wonders what, other than the experience of the authors, recommends that strategy.

Another avenue for development of cases and case teaching would be to examine cases as used. What images of teaching do students derive from various case materials, and from the tasks in which those materials are used? What forms and processes of reasoning do they employ in dealing with cases? What range of issues do the cases raise for students, given their prior experience with teaching? What properties of cases or of the activities surrounding cases aid students to recognize "significant concerns"? What counts as good solutions to problems or good decisions about situations? Barnett's (1991) study of teachers' discussions of cases of mathematical pedagogy, described in the introductory section, examined such issues.

A search for compelling cases. Another question that arises from McAninch's criticisms of the two casebooks is, How should teacher educators find or nominate substantial cases that deserve and bear attention? In other professional fields, the identification of a case seems somewhat more clear-cut than in teaching, since some domains of practice in those fields present naturally occurring units of deliberation and action that both command attention and "generate case records as a by-product of the occupation" (McAninch, 1991, p. 350). The appellate court decision, the patient with presenting symptoms, the manufacturing firm tendering its annual report, the building together with its blueprints, and the chess or bridge game are instances. In teaching, the current approaches to defining and developing cases vary considerably. The indefinite (or diverse) character of cases in teaching may help to explain why the case idea has not taken hold more powerfully, despite efforts over the years to develop a case literature.

At the University of Illinois, Champaign-Urbana, Steven Tozer, Harry Broudy, and colleagues (see Broudy, 1990) are approaching case development in a manner that appears similar to that employed to develop the two casebooks mentioned above but is more detailed and thorough. They began with pilot work in several sites, interviewing teachers to generate a set of roughly 100 typical problems of teaching. These were refined into a survey mailed to a large sample of teachers, who were asked to rate each problem in terms of its incidence or frequency and its seriousness.

The researchers categorized the problems identified as both typical and serious into such broad areas as discipline, parent-teacher interactions, peer interactions, and others. With their survey of problems in hand, the authors began preparing cases that represent these empirically derived crucial problems. One case, for example, consists of a videotaped interview of a minority student, together with his teachers, parents, and counsellor, that prompts questions about how to interpret and respond to the student's relation to schooling in terms of motivation, cultural and family background, prior educational experiences, and other perspectives. The prototype cases so far do not represent exemplary practice, but instead depict central problems upon which professional knowledge may have substantial bearing.

In connection with their cases the researchers also developed a set of readings that provided theoretical illumination, then tested these materials with teacher candidates, working back and forth between the video cases and the readings. The project suggests steps that might be taken to support problem solving and decision making informed by educational research.

Domain specificity. Doyle argues that the problem-solving and decision-making framework has a significant limitation:

> At best, the framework underscores the importance of the general decision processes teachers engage in and even provides categories within which such decisions fall, e.g., students, activities, routines, subject matter, resources, and management. But work in this area has done little to explicate the domain-specific knowledge that teachers use to define problem-spaces or forge decisions. To say that teachers make decisions about students or about activities tells little about the knowledge teachers use in making those decisions. (Doyle, 1990a, p. 11)

In the above passage Doyle is acknowledging and adopting a stance toward the debate as to whether it is more fruitful to conceive and teach reasoning, problem solving, and decision making as generalized skills that apply across many domains or as domain-bounded operations that rely on knowledge in the domain (see Perkins & Solomon, 1989, for discussion of this issue). Doyle adopts the latter position, as we shall see. However, while we agree that some approaches to problem solving and decision making, such as the casebooks discussed above, do assume generalized reasoning processes, we also doubt that that is a necessary element of the framework. If prospective teachers work on particular cases of teaching and use particular ideas from educational literature to identify and solve problems in those cases, they are engaged in domain-specific activity.

Such activity might or might not draw the prospective teacher's attention to the "general decision processes teachers engage in." That would seem to depend on whether the case portrayed a teacher engaged in such decision making processes and whether the teacher educator, in a metacognitive move, called the prospective teachers' attention to the general characteristics either of their own thinking or to that of the teacher portrayed in the case. In any event, recognition of general decision processes might not be the aim. An alternative objective is that the prospective teachers gain particular interpretive vocabularies and learn to use them in framing and solving problems in lifelike cases that contain situational complications.

Developmental research here might compare case work with field observation as alternatives for fostering problem-framing, problem solving, and decision making powers in prospective teachers. Several proponents suggest that cases may be preferable because they afford the teacher educator considerable control of the phenomena that education students encounter, enable the teacher educator to prepare specifically for the discussion or other activity that is employed with the case, and may be easier to arrange. The general question, perhaps, is whether or in what circumstances case work poses authentic (if vicarious) tasks of teaching.

Knowledge and Understanding

In Doyle's third framework, "knowledge and understanding," a case represents knowledge that practicing teachers gain in the classroom and that prospective teachers can gain, in part, by work with those cases. Doyle's characterization of this framework is informed by the study of teachers' knowledge which, he says,

> rests on the premise that what teachers do reflects their understandings of action-situation relationships in classroom environments. . . . The teacher's knowledge is organized around tasks related to solving the problems of order and learning in the classroom environment and around the events in which those tasks are accomplished. . . . Since classroom tasks are seldom well-formed, teachers' knowledge is likely to be organized in complex, conditional networks. (1990a, p. 11.)

In this framework a case might reveal, for example, teachers' knowledge in action to achieve order in the classroom. Cases might include both positive and negative exemplars the study of

which, "develop[s] the knowledge structures that enable teachers to recognize novel events, understand them, and devise sensible and educative ways of acting" (Doyle, 1990a, p. 13). Within this approach, teaching knowledge would be represented in the case, not brought to bear from outside it as in the other two frameworks. The case would be organized around a task, as distinct from the dilemmas that appear so often in cases, so that cases might depict routine and typical aspects of practice as well as the unusual and problematic ones.

In this framework, Doyle (1990a) argues, cases would play a vital part in teacher education, as prototypes that "instantiate theoretical knowledge about teaching." "The essential task of teacher education," Doyle explains, "is one of content representation" (p. 12), and cases "become a way of knowing" (p. 13) or of portraying knowledge in teaching. To accomplish these purposes, Doyle argues, the case must provide, "sufficient detail to enable someone to experience the complexity of the original situation" (p. 13).

Case and theory. Detail or specificity alone is not enough, however. It also is necessary to locate the case in some broader framework of ideas, some conception of teaching.

> In addition, the case must be theoretically specified, i.e., it must be a case of something within a theoretical framework. Rather than simply providing opportunities to practice analysis and decision making, theoretically specified cases supply a foundation for developing the knowledge structures necessary for comprehending classroom realities. . . . Given that much of teachers' knowledge is conditional and context-specific, multiple representations will be needed to help teachers develop the professional knowledge needed for practical reasoning about classroom tasks. (Doyle, 1990a, p. 13)

What would count as "theoretical specification" for cases? From his and others' work on classroom organization, Doyle (1990b) proposes that teachers "organize their thinking during planning and enactment around specific chunks of content" (p. 355). For each chunk of content, the teacher must integrate some worthy academic task with a workable structure for student participation in order to create a "program of action" that provides both humane order and learning. These ideas suggest cases of curriculum enactment. The case "There's No One-Half Here!" described earlier (Barnett, 1991) might be regarded as such a case to the extent that it does portray a mathematical task and a participation structure. One might ask whether it satisfies the criterion of providing sufficient detail to allow a person to experience the complexity of the original situation.

Of course, curriculum enactment is not the only rubric under which cases might be developed and theoretically specified. To date, case development has been guided by the particular theoretical and substantive interests of individual investigators, rather than any achieved consensus within a broad professional community. Theoretical specification is thereby achieved on a local basis, often in the context of particular projects with tightly focused interests such as teaching mathematics for conceptual understanding, responding to the characteristics of urban learners, coping with rural Alaskan communities, or creating a productive and orderly classroom environment.

Context as a knowledge issue. Taken together, the dual demands for details about complexity in a case and for theoretical specification of a case raise the question of how to treat context as a knowledge issue. If knowledge in teaching is highly contextualized, as many investigators now

believe, what aspects or dimensions of context should be represented in cases and related materials? A videotape of a single lesson inevitably provokes questions about what went before and what will come after the lesson portrayed, as a context for interpreting the teacher's actions on the tape. Likewise, teachers react to particular students based on substantial background knowledge that constitutes a context for their decisions and actions. When such contextual cues are stripped down or absent, brief cases contain the potential to mislead and miseducate about the nature of teacher decision making. Case specification, then, requires not only an overarching substantive account of teaching but a theory of how context operates in teachers' case knowledge; to date this crucial issue has received little attention.

Negotiating the Knowledge in Cases

The claim for cases as knowledge asserts there is a "wisdom of practice" or a body of craft knowledge possessed by expert teachers that has been ignored or underrepresented in traditional social science approaches to teaching. Leinhardt (1990a) writes that

> There exists a natural tension between general, subject-based, principled knowledge in a discipline and the specific, eclectic, particular knowledge acquired in the practice of a related craft. Teachers as both professionals and practitioners are caught up in this tension. Their professional training in institutions of higher learning emphasizes theory as an efficient, universal, cohesive truth filter for disorganized, practical experience. . . . However, teachers also appear to learn in their profession and to communicate with their colleagues and others in the language of craft and practice–in fact, in the language of the particular. (p. 18)

Many of the initiatives described in this chapter engage teachers in identifying problems and in discussing their responses to them. Judith Shulman and Joel Colbert (1987, 1988) have produced two casebooks on problems that mentor and intern teachers face. Each contains a series of brief, page-long vignettes. In their use, a vignette is

> a story about a particular event, experience, or relationship. [It] describes what led up to the event and the consequences that followed the event. To the extent possible, it also describes how the participants in the event were thinking and feeling. (1987, p. 81)

The vignettes were written by mentor or intern teachers in collaboration with the casebook editors; Judith Shulman (1992) describes persuasively and specifically how much there is to learn if such collaborations are to be successful.

In these two casebooks, the vignettes are treated as cases within a class of characteristic issues such as teaching with minimal content knowledge or interacting with students. In organizing their casebooks, Shulman and Colbert treated the vignettes as data, in the manner of critical incidents, subsequently categorizing and grouping vignettes into sections of the casebooks, based on their familiarity with the literature on coaching, advising, mentoring, and related topics. Thus, as McAninch (1991) notes in her review, "The contribution of theory to this casebook was primarily in the organization and selection of vignettes, rather than in the explication and interpretation of the events initially described by teachers" (p. 351). However, accompanying the vignettes are reactions–commentaries–by other teachers or researchers who supply various perspectives on the incidents described.

Collaboration between teachers and researchers in case writing and incorporation of teachers' and researchers' commentaries with teacher-written cases both suggest a negotiation of the knowledge in or about cases. The case development advocated by Doyle (1990a, 1990b) and described by Leinhardt (1990a) in the context of teacher assessment clearly moves beyond description and analysis to representation of knowledge that aspires to normative and prescriptive status. This is a controversial ambition in the face of suspicions about best or exemplary practices. However, such work might aim at the more modest goal of representing defensible practice that admits defensible alternatives, so the objective is not to rule out alternatives via some experimental, hypothesis-testing procedure but to identify alternative, effective practices under specified conditions and assumptions.

Leinhardt (1990a) reviews several efforts to extract craft knowledge, discussing such methodological issues as how to identify experts, how to delimit the boundaries of their expertise, how to codify their knowledge, and how to treat its validity. Whereas some investigators rely on methods such as surveys, which cast teachers as subjects from whom to elicit information, the methods she reviews involve teachers in shared, public discussions about practice, draw on theory to "find patterned consistency in what is happening in a successful episode of teaching" (p. 19), and rely on performance verification across a range of situations to test whether teachers actually do what they say.

In these procedures, for which few precedents or principles exist, case development resembles a complex hybrid of applied research and curriculum development, linking questions about how to test and represent knowledge in cases to questions about how to construct curriculum to promote learning. Such development work further requires new forms of supportive organization that join teachers, teacher educators, and teaching researchers in productive relations. How such case development might fruitfully be organized and how the status of cases might be negotiated are issues for study.

The limited experience to date does suggest that case development is a promising activity around which to structure professional community. The question here concerns who participates in case development through what methods and how knowledge represented in cases is generated and tested. Case advocates argue that case development is a natural collaborative activity through which to join the knowledge of university-based researchers and teacher educators and the craft wisdom of experienced teachers. The promise of such collaboration rests on a sociopolitical claim as well as an assertion about case and craft knowledge.

Through engagement in the generation and testing of knowledge in teaching, case development may accord practitioners greater status and authority within their professional community. If teachers merely implement high-status knowledge that emanates from the university and is represented in mandates, training and instructional materials, and policy instruments, their status is defined as that of bureaucratic functionaries working under the direction of others. But if teachers aspire to professional status, then their involvement in the production of knowledge useful to teaching is critical. Case development is one vehicle through which teachers might participate in such knowledge production.

A Curriculum of Cases?

One option for organizing a professional education curriculum, evident in other fields, is to create a curriculum that is entirely case-based: To some high degree, the problems of and thinking about the field would be embodied in a set of cases, and work in the field would revolve around those cases, as would interaction among persons who participate in it. Kleinfeld (1992) reports that Teachers for Alaska, described briefly in our introductory section, is such a program.

Law school is the most obvious example of a case-based curriculum, but some business schools have developed strong case traditions as well. Christensen's (Christensen with Hansen, 1987) volume on case teaching at Harvard suggests that, when all the faculty of a professional school rely on cases and case teaching, strong conventions develop that are shared by faculty and students. The professional community supports the use of cases and contributes to their power and utility as tools for learning. Constituent elements of that community include a set of cases held in common as well as a set of understandings and conventions about what is a case, how cases are constructed and evaluated, and how cases are taught. A discourse community develops into which new members are inducted through repeated engagement with cases across courses, so that students receive powerful reinforcement in the skills of analysis and deliberation. A case-based curriculum gains its power as much through the shared conventions and traditions within which cases are employed as through particular characteristics of the cases themselves. Experience with case analysis is cumulative over the course of professional education.

While a fully case-based approach seems unlikely for teacher education in the near future, the approach draws attention to the importance of the cultural and social elements of a community of practice–traditions, conventions, discourse norms, shared values, and induction processes. It is too early to tell whether a set of case conventions will take root in teacher education; a range of practices has emerged, and teacher educators are beginning to offer accounts of their work. These early developments reveal teacher educators seeking to integrate cases with all aspects of the teacher education curriculum. Teacher educators as we have noted report using cases to teach subject matter (Kleinfeld, personal communication; Wilson, 1992); to convey understanding about cultural characteristics of students (Kleinfeld, 1990); to impart instructional methods including classroom management (Carter, 1992); to encourage reflection on field experiences (Florio-Ruane & Clark, 1990); to focus mentor-novice conversations (Carter, 1988); and to analyze experiences of both mentors (Shulman & Colbert, 1987) and interns (Shulman & Colbert, 1988). These emerging practices do not reveal any shared set of conventions but rather an eclectic mix of approaches; there are more questions than answers about how to use cases effectively in conjunction with other instructional methods and experiences.

Transition

Advocates of cases are anxious to enlist more teacher educators in their cause, but the methods for producing cases for use in instruction are not settled, nor is it clear that they should be settled soon. The advocacy literature on cases projects bold, revisionist hopes, but what faces case proponents is a major curriculum development effort. That effort might be guided by a view of the kind of community of practice to which prospective teachers should be inducted and the part that cases might play in it. It should also be guided by views of the learner and of learning to teach.

Learning to Teach From Cases

As cases might be employed in several kinds of conversation and reasoning about teaching, they also might be employed in several strategies for helping prospective teachers learn to teach. Contemporary research on teacher education portrays teacher educators struggling to bring to the surface, explore, and ultimately change novice's beliefs and knowledge on a wide range of issues, as the starting point for desirable practice (see, for example, Carter, 1990; Feiman-Nemser & Buchmann, 1989; Hollingsworth, 1989; and Kennedy, 1991). Much evidence amply documents that novice teachers have faulty, incomplete, biased, or limited knowledge about the subjects they will teach, the pedagogies involved, the nature of knowledge and of learning, the nature of teaching as role and activity, and the nature of the learners they will encounter. Based on their long involvement in schooling, novice teachers have unusually rich images and powerful ideas resistant to change. Teacher educators explicitly frame their aims in terms of seeking to induce cognitive change. The themes of breaking with experience (Buchmann & Schwille, 1983; Floden, Buchmann, & Schwille, 1987), reflective practice and cognitive or conceptual change tilt teacher education toward reform of practice and toward independent thinking as the goal of professional education (for a cautious reappraisal, see Buchmann, 1989, 1991).

Because many teacher educators are critical of current practice and increasingly view teaching as complex work, they appreciate more pointedly than ever how difficult is their mission. Cases might serve teacher educators' orientation toward reform and analysis and aid them in some of their difficulties. For example, videotaped and written cases may allow the portrayal of exemplary practices, could provide vivid counterimages to conventional practice, and might encourage multiple interpretations and problem solving discussions.

To explore such prospects, we will attempt here to overlay two sets of sketches, that is, brief synopses of relevant arguments. One set of sketches concerns teacher learning; it includes arguments that suggest what prospective teachers have learned by the time of entry to teacher education programs, what they need to learn in order to become teachers, and how that learning occurs. We will begin with arguments that depict learning to teach as a matter of learning to think about teaching activity, and proceed to arguments that depict learning to teach as a matter of learning to act as a teacher.

The second set of sketches concerns the kinds of encounters that prospective teachers might have with case materials, case methods, and case teachers. As suggested earlier, learning from cases may depend on the nature of the cases and on how cases are integrated into curricular patterns and activities; variation also is emerging in instruction with cases. While strong conventions of case-based instruction exist in other fields (see Christensen with Hansen, 1987, and Christensen, Garvin, & Sweet, 1991), education is exploring.

One kind of encounter is the case discussion, in which a group of students explores interpretations of a written or video case under the tutelage of an expert leader. A second kind of encounter relies on combinations of computers and media that allow students singly or in groups to repeatedly study and reconstruct a multimedia case. With such "hypermedia," students can literally reconstruct a videodisc text. A third kind of encounter is the student production of cases. Increasingly in teacher education, instructors have students create their own written cases based on their experiences in classrooms.

And a fourth kind of encounter, participation in a simulation, is a method related to but distinct from case teaching as commonly defined. We stretch our topic somewhat here in noting that some teacher educators use simulated experiences as a form of encounter with what arguably might be termed cases. Each approach provides a distinctive form of encounter with cases, within which the student constructs meaning and builds knowledge, but the constructivist principles vary. Each approach attempts to take the prospective teacher closer to practice, but under conditions that avoid the pitfalls of unmediated experience (Feiman-Nemser & Buchmann, 1985).

By shuffling the synopses of arguments about learning to teach with the synopses of encounters with cases, we intend to explore the possibilities in the case idea. To help keep order in this discussion, we will mark off the arguments about learning to teach with the headings listed above, and we will designate the various approaches to cases as "close encounters of the first, second, third, and fourth kinds."

Prior Knowledge and Conceptual Change

One influential line of contemporary research asks how knowledge grows and changes in the mind. Such research begins with the observation that individuals' prior knowledge of various phenomena often impedes more accurate and valid understanding, so that the aim of instruction must be to modify prior beliefs, rather than simply fill up the empty vessel of the mind. There has been an explosion of research of this sort around children's conceptions of mathematics, of scientific concepts—of school knowledge and skills in general. This work strongly demonstrates that prior conceptions exert a powerful hold and are difficult to alter. Contemporary instructional aims include inducing conceptual change as a central preoccupation.

Not surprisingly, research on learning to teach has adopted this "conceptual change" orientation, exploring the prior knowledge that novices bring to teaching and tracking the effects of teacher education in modifying these prior beliefs. Investigators have studied novices' knowledge of and beliefs about subject matter, pedagogy, students, the teacher's role and the practice of teaching (see the volume by Brophy, 1991; Carter, 1990; Hollingsworth, 1989; see also the research sponsored under the auspices of the National Center for Research on Teacher Education [NCRTE], particularly Ball, 1990a; Florio-Ruane & Lensmire, 1990; Kennedy, 1990; McDiarmid, 1990; and Paine, 1990). This work demonstrates that individuals enter teaching with ideas that are well formed, powerful, resistant to change, and often, from the perspective of teacher educators, wrongheaded.

A brief sampling of findings from the program of research carried out within the NCRTE is suggestive (Kennedy, 1991). The student teachers in their study sample were primarily young, white women from small, homogeneous, lower middle-class communities, who had little experience with people different from themselves. They had little understanding of learners who might respond to school subjects differently than they did. They tended to view subjects, in this case mathematics and writing, as sets of fixed rules and procedures with few connections among them or to the world outside the classroom. With respect to teaching and learning, the researchers found that most undergraduates hold a limited view of their role as teacher, regard teaching as telling, and view learning as absorbing and reciting back what the teacher has told. With respect to student diversity, most students had two simple values–to treat all students alike and to meet individual differences–but little sense of the apparent contradiction or of how to act on either view.

The evidence also suggests that teacher education does not significantly modify these prior beliefs. Clearly, the apprenticeship of observation so widely noted plays a lead role:

> Because teachers have logged over 3000 days as classroom participant observers, they have not only developed strongly entrenched beliefs about teaching and learning but have also developed a strongly entrenched belief that they already know what teaching is all about and that they have little to learn. (Kennedy, 1991, p. 9)

Conceptual change theory (e.g., Posner, Strike, Hewson, & Gertzog, 1982) posits that modifying strongly held beliefs requires the introduction of discrepant images and information to provoke dissonance. But the alternatives proposed must be plausible and vivid in order to make an impression and must be accompanied by questions or experiences that force the teacher candidates to recognize the discrepancy between their present beliefs or knowledge and the alternatives. Supplying a vivid case by itself, the evidence suggests, will not provoke change, for a common dissonance reduction technique is to distort or deny the conflicting information.

The research on teachers' prior knowledge and beliefs and the resiliency of such knowledge constitutes a major challenge to teacher education. The conceptual change perspective suggests a central role for cases as primary sources of stimulation for change. Video cases that portray unconventional approaches to teaching may serve as starting points for the process of change. Narrative accounts such as Vivian Paley's also challenge common beliefs. In her book White Teacher (1979), for example, Paley describes the evolution of her thinking about managing race relations in a kindergarten classroom. Her initial impulse to be color-blind gave way gradually to an open acknowledgment of race and a celebration of racial and cultural differences among the children. When teacher candidates read this case, they often recognize that they would respond as Paley did initially but come to recognize how this stance backfires and why Paley's discoveries and subsequent actions are wise. The case serves both to convey knowledge about how to deal with race in the classroom and to portray how a sensitive teacher can study and modify her own beliefs.

Close Encounters of the First Kind: Case Discussion

Of the four kinds of encounters that prospective teachers might have with cases, case discussion has been most thoroughly practiced, using both written and video cases. To date, the most common aims of case discussion either have been to apply theory to cases or to practice making decisions about problematic situations that arise in teaching, where the basis and justification for decisions often are weakly specified (for discussion of this problem, see McAninch, 1991, and Sykes, 1989). But cases clearly hold potential as devices for helping to induce change in prospective teachers. Most obviously, if teacher educators hold transformative aims and seek to promote new instructional practices and social ideals not widely available for observation in schools, then cases might constitute one bridge between hortatory pronouncements and new practices and attitudes. Video cases in particular may have value in presenting vivid, concrete images of desirable instructional practices that may help change the minds of prospective teachers.

However, there are competing images of what such change-oriented discussion might resemble. Some researchers such as Leinhardt (1990b) and Berliner (1988) advocate video cases that demonstrate exemplary teaching. Such cases help to bridge the gap between theories of instruction and their implementation under real conditions. Students can observe process

approaches to writing, for example, or successful instances of mainstreaming special needs children into regular classrooms, or science teaching for conceptual understanding, or cooperative learning techniques. The case, in this image, represents an instance of desirable or effective practice that the novice might be expected to admire and to emulate. What may provoke change, then, is not only the existence of a workable alternative to conventional instruction but the portrayal of a master teacher exhibiting great skill in modeling effective practice. Case discussion would analyze various complexities in the teaching portrayed; the aim would not be to demand slavish imitation but to induce change in the direction of the exemplar.

Other investigators, however, frame a somewhat different set of purposes. Rather than demonstrating exemplary practice, video cases "would be treated in a manner analogous to a piece of literature or an historical event to be understood from a variety of perspectives. . . . The teacher educators and the prospective teacher would be engaged in active reflection and research" (Lampert & Ball, 1990, p. 6). Rather than applying theory or mastering techniques, these researchers propose that students engage in inquiry as the fundamental act of learning to teach: "Teacher education students will have the capacity to do research on their own questions about how teaching and learning proceed in classrooms" (p. 7).

In this second instance, the modeling occurs as much within the discussion as through presentation of text or video images. The teacher educator models ways of reasoning about teaching and learning, ways of observing and of bringing relevant considerations to bear. Here, too, the teacher educator may take great care in selecting exemplars, that is, examples of interesting phenomena rather than normative models or techniques. In a mathematics methods course, for example, the instructor might provide several cases of teachers responding to students' incorrect answers, raising for discussion the issue of how to treat "wrong" answers in mathematics.

Novices might be expected to dismiss quickly such answers and to issue swift correction directly or to call on other students of known ability, but through discussion, the instructor might bring to the surface the assumptions about mathematics that such pedagogy entails and explore various uses of incorrect answers to foster understanding and to build a genuine community of mathematical discourse.

Cognitive Flexibility and Ill-Structured Knowledge

Rand Spiro and his co-workers have developed a line of research that bears directly on learning from cases (see Spiro, Coulson, Feltovich, & Anderson, 1988; Spiro, Feltovich, Coulson, & Anderson, 1989; Spiro & Jehng, 1990; and Spiro, Vispoel, Schmitz, Samarapungavan, & Boerger, 1987). They propose a basic distinction between well- and ill-structured knowledge, concentrating on how to promote concept use in the latter area. By "ill-structured," Spiro et al. (1987) refer to a set of overlapping characteristics:

> There are no rules or principles of sufficient generality to cover most of the cases, nor defining characteristics for determining the actions appropriate for a given case.
>
> Hierarchical relations of dominance and subsumption are inverted from case to case.
>
> Prototypes tend to often be misleading.

> The same features assume different patterns of significance when placed in different contexts.
>
> An explosion of higher order interactions among many relevant features introduces aspects of case novelty. (p. 184)

Under these conditions, approaches to teaching that assume routine application of general principles or concepts to cases likely will be ineffective, for students will be unable to apply abstractions to the range of irregular cases that arise. Furthermore, teaching itself is likely to contribute to misunderstanding by supplying single representations or analogies that validly convey some aspects of complex ideas and situations but fail to convey, or misconvey, other important aspects of those same ideas and situations.

Spiro et al. (Spiro, Feltovich, et al., 1989; Spiro, Vispoel, et al.) illustrate their theory with examples drawn from medical education, 20th century literary criticism, and military strategy among others, but language learning provides the most basic example. Many words have multiple meanings and many shades of nuance. We build up an understanding of how to use language through repeated practice in speech, reading, and writing. In company with the situated cognition theorists (see the discussion below), Spiro and his colleagues believe that all knowledge is like language, and they seek a method for reproducing the principles of language acquisition and use in the procedures and materials of formal instruction.

Spiro, Vispoel, et al. (1987) further distinguish knowledge reproduction from knowledge use, associating the latter process with another major topic in cognitive psychology, the transfer of knowledge to new situations. Their theory of cognitive flexibility focuses on the application (or transfer) of knowledge in ill-structured domains, and they indicate that most school learning deals with reproducing, not using, knowledge in well-structured domains. Their work has led to explicit principles and practices–in fact, a technology–of case instruction. Their aim is to promote flexible use of knowledge in complex and ill-structured domains such as medical education.

Spiro and colleagues describe experiments with two instructional tactics. One is to provide multiple representations and analogies to counteract the misconceptions that arise when teachers rely on single representations (see Spiro, Feltovich, et al., 1989). Here, Spiro and his colleagues are concerned with ways to promote deep understanding of complex concepts. They argue that too often teachers rely on single, simple analogies that create problems through incomplete or biased imagery.

To illustrate, they describe various efforts to portray the functioning of muscle fibers by means of a range of representations (e.g., muscle contractions as a rowing crew, a turnbuckle, or a Chinese finger cuff). These different analogies convey differential images and understanding of muscle activity. Each representation by itself is inadequate; taken together, they correct each other's partiality and distortion and convey more usable understandings of muscle activity. Single analogies are like single cases as instantiations of concepts or principles; multiple cases correct errors of overgeneralization from any case, increase the range of valid connections between abstractions and cases, and so build the student's cognitive flexibility.

A second tactic, which perhaps is only a variation on the first, is to decompose complex, multidimensional cases into many "mini-cases" through which students can build up an understanding of the larger case (see Spiro & Jehng, 1990). They illustrate this tactic with a literary example, the analysis of themes in the

movie Citizen Kane. The entire film constitutes the case, but individual scenes and episodes serve as mini-cases for analysis. To construct an interpretive matrix for the film, the mini-cases are cross-referenced with dramatic themes typically used to interpret the film as a whole, so that a student can explore a given theme's differential applications to several mini-cases, or can compare the application of different themes to a given mini-case.

Close Encounters of the Second Kind: Exploring Cases in Hypermedia

This tactic of assembling nuanced knowledge of the whole from repeated visits to its parts is crucially abetted by new technologies: Scenes from Citizen Kane are stored on a videodisc linked to a computer that allows students to select the scenes and themes for study. The student can choose a dramatic theme and read commentaries about how that theme applies to scenes throughout the film, or choose a scene and study commentaries that discuss how several dramatic themes are played out in it. The students are working in a matrix defined by scenes and themes and filled by commentaries that link them. Following Wittgenstein (1953), Spiro and colleagues refer to work in this matrix as "criss-crossing a conceptual terrain," and this becomes their central metaphor for learning.

This last example illustrates several theoretical hunches. One is that cases or examples, like the scenes of the film, must be studied in context (the film as a whole), not as stripped-down textbook vignettes that oversimplify the application of principles to cases. Another is that whole cases are frequently too complex to serve as the proper unit of instruction. Mini-cases are more manageable and more numerous in promoting the construction of flexible knowledge, for in economical fashion students gain experience with a variety of cases. Finally, they argue for extensive and specific interaction between powerful generalizations that help to interpret a domain and the rich particulars of case knowledge. "Our programs neither neglect cases to teach concepts," Spiro and Jehng (1990) comment, "nor concepts to teach cases–both are taught in the context of the other. Learning is situated but abstract knowledge is not ignored. Our approach teaches concepts and cases simultaneously, not separately: concepts-in-practice" (p. 199).

To apply such reasoning and techniques to cases in teaching, teacher educators would have to decide how to mark off a case of teaching, to distinguish the mini-cases within it, and to relate useful principles and generalizations to those mini-cases. For example, it appears that a detailed story of teaching a unit on the negotiation of the U.S. Constitution might, like Citizen Kane, serve as a case. Each day's lesson or each activity within a lesson might be nominated, like a scene from the film, as an interesting mini-case. A variety of arguments regarding the purposes of teaching political history, the lines of historical interpretation pertinent to the U.S. Constitution, students' prior conceptions of politics and government, conceptual learning, classroom organization, and other topics might usefully be brought into connection with those mini-cases to

complete an accessible object of study, rich both in descriptive detail and in interpretive equipment.

The second kind of encounter with cases, then, would involve students in the use of videodisc technology and hypermedia programs that allow students to explore and reconstruct cases that could include both moving and still pictures with multiple audio tracks and text. This experimental approach is one notch more active than construction through discussion, for students can actually manipulate the case to juxtapose scenes and episodes repeatedly in order to explore different themes and ideas, patterns and sequences of action. Some exploratory work is underway that tests the power of this technology in conjunction with video cases. In addition to the work already cited by Spiro and Jehng (1990), the Cognition and Technology Group at Vanderbilt (1990) is experimenting with hypermedia applications in an elementary school; they report enhanced learning in relation to such outcomes as writing stories, making use of historical information, and solving mathematics problems. They also report positive effects on motivation and on transfer of learning.

To our knowledge, investigators have not yet tested case-based instruction with this technology in teacher education, but work is underway in the Mathematics and Teaching Through Hypermedia (M.A.T.H.) Project at Michigan State University (see Lampert & Ball, 1990). Magdalene Lampert and Deborah Ball are engaged in a long-term development project that involves extensive documentation of teaching and learning in their own elementary mathematics classrooms, where each teaches on a regular basis. Over the course of a year, they have assembled a rich storehouse of case material that includes videotapes of their instruction, journals of reflection on their teaching, lesson plans and instructional materials, videotaped interviews with their students that explore their mathematical understanding, and a range of student-produced materials, including student journals. The videotape library eventually will be catalogued, stored, and accessed via hypermedia technology, for use in teacher education.

This project might be considered as two, yearlong cases of mathematics teaching portrayed in unusually extensive detail from the multiple perspectives of teacher thinking and planning, the instructional record, and student learning. But the documentation subsequently may be assembled in a variety of ways to constitute a curriculum for teacher education, where videotaped instructional episodes, linked to other sources of data, provide mini-cases for exploration of a range of topics that could be organized by central problems (e.g., “What to do in this situation?”), by task (e.g., “How to open a lesson on the equivalence of fractions?”), or by aspects of instruction derived from theory (e.g., “norms of discourse in mathematical communities”; “use of multiple representations in conveying mathematical ideas”). Finally, these investigators frame their use of this case material in terms of inquiry, rather than as instances of model teaching to be emulated by novices. Developmental work of this sort is slow and costly but holds promise for creating a new pedagogy in teacher education that possesses powerful advantages. Even if hypermedia applications of cognitive flexibility theory do not achieve widespread application, these ideas about knowledge acquisition, transfer, and use provide provocative leads for the design of teaching cases.

Authentic Learning and Situated Actions

Another influential theory argues that all knowledge is situated in–and grows from–the contexts of its use (see Brown, Collins, & Duguid, 1989; and Collins, Brown, & Newman, 1989). "Situations co-produce knowledge through activity," claim the authors (Brown et al., 1989, p. 32). The activities and contexts within which individuals learn provide vital, necessary support for learning and for action; when the context of knowledge use is stripped down, as too often occurs in school, the learning is impoverished.

The view that learning is fundamentally situated derives from a number of examples; again, the most prominent is language acquisition. In everyday speech, many words point to a part of the situation in which speech is occurring. Such words as "here," "now," "next," or "this" serve to index or refer to the situation of the speech act. Brown et al. (1989) make the central claim that all knowledge is like language in indexing or referring to situations. Thus, to promote conceptual understanding requires attention to situations of use. Furthermore, abstract concepts contain many nuances of meaning so that conceptual learning proceeds with multiple encounters with concepts across situations to facilitate the progressive construction of understanding. Ordinary speech naturally provides occasions for acquiring such nuanced understanding, but in specialized domains of knowledge that include technical concepts, the occasions for use that naturally index concepts may not be routinely available to build up understanding.

Coupled to the indexical character of conceptual knowledge is an emphasis on the activity within which concepts are used. Brown et al. (1989) underline this insight by comparing concepts to tools used by artisans in guilds where they learn to use tools through participating in the community of tool users working on authentic tasks. Entry to such communities of practice often occurs through apprenticeship, another idea explicitly invoked in their theory. Authentic activity comprises the ordinary practices of the culture. In the case of language, it is general culture. In the case of specialized conceptual knowledge, it is the technical subculture formed by disciplinary or professional fields.

The problem of school learning, and perhaps of teacher education, then, is twofold: The situations of knowledge use supply neither rich, indexical references nor genuine activities and contexts that produce learning:

> Teaching methods often try to impart abstracted concepts as fixed, well-defined, independent entities that can be explored in prototypical examples and textbook exercises. But such exemplification cannot provide the important insights into either the culture or the authentic activities that learners need. (Brown et al., 1989, p. 33)

While the situated cognition theorists acknowledge the partial and speculative character of their ideas, they also propose several specific instructional strategies including "cognitive apprenticeships" (Collins et al., 1989) and

collaborative activities within which knowledge is socially constructed.

These ideas shed disturbing light on learning to teach. First, if future teachers' own learning is thin, abstracted, and inauthentic, then they will have difficulty teaching authentically, for their own understanding of subject matter is likely to be limited, and they will have few models to work from. Second, many of the concepts conveyed in teacher education course work, such as "metacognition," "schemata," "cooperative learning," or "reciprocal teaching" are indexed to situations of use in classrooms (see Kennedy, 1991). In terms of situated cognition theory, this means that such concepts are best learned in the context of authentic activities in schools and classrooms. It follows that for such concepts to become part of the working vocabularies and repertoires of teachers, theoretical knowledge should be connected to situations of use, and this insight leads naturally to an interest in apprentice and intern arrangements, simulations, and other forms of guided clinical experience. Cases of various kinds might then constitute learning tools within field experiences.

Finally, the situated cognition perspective draws on the image of apprenticeship in a guild or professional community as a powerful form of learning. But this image requires a stable, satisfactory practice that the novice can join. If the aim of teacher education is a reformed practice that is not readily available, and if there is no reinforcing culture to support such practice, then the basic imagery of apprenticeship seems to break down. Teachers' knowledge is situated, but this truism creates a puzzle for reform. Through what activities and situations do teachers learn new practices that may not be routinely reinforced in the work setting?

Close Encounters of the Third Kind: Cases, Simulations, and Field Experiences

If the most common form of encounter with cases is through discussion, another form is through direct participation in a case constructed to simulate core tasks or problems of practice. And if one form of case is a narrative, another form might be an exercise that requires problem framing and solving by students under conditions that approximate the real thing. Simulations might be designed around such events as an Individual Educational Program (for special education students) planning meeting, a parent-teacher conference, the development and presentation of a school improvement plan, or the response to a desegregation order that will alter the student composition of a school. The simulation materials might include background information on the school and community, test score and other data on students, district or state policy that bears on the problem or task, and resource readings that supply theoretical perspectives.

In a simulation, students gain experience once removed in such skills as analyzing problems, interpreting data, working in groups, making presentations, dealing with interpersonal and group conflicts, and bringing theoretical knowledge to bear. Simulations can be carefully designed and controlled to focus on issues that instructors deem important. This contrasts with clinical experiences in the field, where the presenting problems are naturally occurring rather than under the control of a teacher educator. However, there are also some options for standardizing problem-based clinical practice, including for example the use of portfolios that set tasks for students to accomplish and document during field assignments.

In drawing brief attention to simulations and the possibilities for structuring clinical experience, we want to set the case idea into a larger family of practices in teacher education that has a long

Schon goes on to argue, however, that repeated engagement with the "typical" cases of practice can produce overlearning, rigidity, blindness, and boredom. The antidote is reflection, through which practitioners can bring to the surface and critique tacit understandings and begin to notice situations of uniqueness and uncertainty that they have denied or avoided. In this process, anomalous cases serve as strategic sites for development, where the practitioner constructs "a theory of the unique case." Crucial to such reflective inquiry is the process of "seeing as," in which the practitioner draws on the standard repertoire of past cases, identifying similarities and differences with the unique case. The "case" is a fundamental unit of learning for routine practice, and potentially for reflective practice, but the latter, Schon implies, must be cultivated as actively as the former.

Schon's (1983) account resembles casuistry, in that the practitioner reasons from case to case, rather than from theory to case. However, there is an important difference: The process of casuistry locates interaction in thought, between precedents and current cases, while in Schon's argument, the interaction occurs between thought and action as the practitioner experiments informally.

One final feature of Schon's work is worth comment. Under the rubric of "repertoire-building research," he advocates development of cases that reveal not only "the starting situation, the actions taken, and the results achieved" (1983, p. 315) but also the process of inquiry, as the practitioner turns over in his or her mind alternatives, competing considerations, and various moves to make. Such cases can serve as double exemplars, revealing both the precedents with their solutions and the ways of thinking about them.

The emphasis on reflection and inquiry into one's own practice as a disposition and complex set of skills may suggest a bridge between the transformative aims of teacher educators and current practice in the schools. Teacher educators might create "virtual worlds" in laboratory settings within which to convey exemplary practices, as scholars have urged (e.g., Berliner, 1985). And they might seek to encourage an inquiry orientation to practice through which teachers learn to study and continuously modify their teaching. If inquiry and continuous improvement are established as norms and dispositions with associated knowledge and skills, this supplies indirect impetus to the long-term improvement of teaching and the transformative goals of teacher education. Cases, then, might portray master teachers reflecting in action and modeling the dispositions, norms, and skills involved in this stance toward teaching.

A case literature of this kind has begun to emerge in teaching (see, for example, Ball, 1990b; Lampert, 1985,1990; Paley, 1979, 1984), in which teachers both describe episodes, lessons, or aspects of their teaching and report their unfolding thoughts about the teaching portrayed. What is not yet clear is how to use such cases to help novices become reflective. If reflection is regarded not only as an ability, but also as a habit that typically must be practiced in the face of a multitude of competing demands, one might argue that (vicarious) reflection on cases, as preparation for reflection on practice work, ought to be a staple in teacher education.

Close Encounters of the Fourth Kind: Students Writing Cases

Each of the encounters described to this point–case discussion, use of hypermedia, and simulations–can promote the aims, dispositions, and methods of reflection, but a fourth form of encounter with cases seems especially pertinent. Some teacher educators involve students in writing their own cases as a quintessential method for reflecting on experience. Student-produced cases can also be used with future students, so this instructional activity has multiple benefits. Teacher educators also provide instruction in case writing, sometimes linking case development to field-based data collection (see Florio-Ruane & Clark, 1990; Laboskey, 1992), sometimes to writing stories of personal experience in student teaching (see Kleinfeld, 1991). Case writing is a demanding, intensive, complex activity that is most often used strategically as a culminating or consolidating assignment.

Here too a variety of practices has emerged, and the case idea is but one lead to the use of student narratives in teacher education. Schon's volumes stimulated substantial interest in reflection, but subsequent work has both challenged (e.g., Grimmett & Erickson, 1988) and extended his insights (e.g., Clift, Houston, & Pugach, 1991). Recent work has begun to distinguish among the aims and frames for reflection. Gore and Zeichner (1991), for example, note that generic approaches to reflective teaching are largely silent about

> what it is that teachers ought to be reflecting about, the kinds of criteria that should come into play during the process of reflection (e.g., what distinguishes good from unacceptable educational practice), and the degree to which teachers' deliberations should incorporate a critique of the institutional contexts in which they work. (p. 120)

There is great variety in the substance and methods of reflective inquiry in teacher education. Gore and Zeichner (1991) go on to identify four broad topics for reflection that have deep roots in teacher education and that continue to receive attention today: the representation of subject matter to promote student understanding; the thoughtful application of particular teaching strategies and principles derived from research on teaching; the encounter with cases seems specially pertinent. Some teacher educators involve students in writing interests, thinking, and development of students as a basis for sensitive, responsive teaching; and the critical scrutiny of the social and political context of schooling and the assessment of school and classroom processes from the perspectives of equity, social justice, and humanity (for extended treatment of these traditions, see Liston & Zeichner, 1991).

Likewise, teacher educators pursue a variety of methodological approaches. Some teacher educators (e.g., Richert, 1992) describe student writing in the language of the case idea. Others draw on the tradition of action research to frame student assignments and engage students in inquiry during field assignments (see Gore, in press; and Noffke & Brennan, in press). Still others (e.g., Mattingly, 1991) are exploring storytelling as a mode of action research through which practitioners frame and share cases with colleagues.

Evidence about the effects on student learning of case write-ups, action research projects, and other forms of reflective inquiry is mixed. Zeichner and Liston (1987) and Gore and Zeichner (1991) report disappointing results from various studies of one inquiry-oriented teacher education program. In contrast, Kleinfeld (1991) analyzed her students' narratives of beginning teaching in terms of initial and concluding concept maps. She reports that

> the structure of students' thinking changed as they reflected upon their experience and wrote a case about it. Students typically began with a map of the world that was rigid, simplistic, and implicit. They ended the case with a map of the world that was much more complex, conditional, contextual, and explicit. Students often ended the case with new problems, questions they were now asking of experience. (p. 2)

Expertise in Teaching

In the final argument we consider the emphasis shifts yet more strongly from thought to action, locating knowledge and skill more squarely in the acts–and particularly the routines–of teaching. The theories described to this point all divide their terrain into two broad regions: routine and nonroutine; well structured and ill structured; certain and automatic versus uncertain and problematic (geographical metaphors abound in the literature describing knowledge and practice). They choose to focus on the nonroutine, ill-structured, and problematic region, commenting along the way how knowledge and skill from the well-structured, routine, and paradigmatic region serves as a resource, to be used with judgment on ill-structured problems. Their work also focuses on thought, although Schon portrays the interplay of thought and action.

But we might now ask, How important are the routines in teaching? Are they easy to acquire, establish, and use? How do teachers learn to act as well as to think? And, are cases helpful in acquiring action routines? These questions occupy another line of research that is worth juxtaposing to the arguments so far covered; a balanced view of learning to teach requires an account of action as well as of inquiry and reflection.

Investigators interested in such matters have drawn their ideas from the branch of cognitive psychology that explores artificial intelligence (AI) and the creation of "machines who think" (McCorduck, 1979). The analogy of mind to machine is an old one that has received stimulus in the modern era with the invention of the computer, and within the AI field, a central distinction suggests how action can become a central topic in the study of mind. In the early days of AI work, argument broke out over whether to program "expert systems" via declarative or procedural representation (Gardner, 1985, p. 161). The former codes knowledge as a set of stored facts or declarations, while the latter relies on sets of procedures or actions: "Proceduralists felt that human intelligence is best thought of as a set of activities that individuals know how to do; whatever knowledge is necessary can be embedded in the actual procedures for accomplishing things" (p. 162).

This emphasis on activity-related knowledge raised questions about how such knowledge is organized and represented in mind and led to interest in schemata, scripts, plans, and other information storage and processing concepts (see Sacerdoti, 1977; Shank & Abelson, 1977). This conceptual work joined the empirical program that compared expert to novice performances in such activities as chess playing or physics problem solving and eventually influenced the cognitive research on teaching. The term "expertise" took on precise meaning, rather than referring generally to the role, status, or general competence of a professional. Leinhardt (1990b), for example, defines expertise as, "A technical term that refers to working with speed, fluidity, flexibility, situationally encoded informational schemas, and mental models that permit larger chunks of information to be accessed and handled" (p. 147).

In the research that Leinhardt and her colleagues have conducted (see Leinhardt, 1988; Leinhardt & Greeno, 1986; Leinhardt & Smith, 1985; Leinhardt, Weidman, & Hammond, 1987), teachers' classroom knowledge is divided into two broad categories of subject matter and lesson structure. In the latter category, her research examines how expert teachers develop fluid activity structures represented mentally as schemata or "interrelated sets of organized actions" (Leinhardt & Greeno, 1986, p. 75). Using this framework, teachers' lessons may be divided into segments that are highly routinized. Lesson segments constitute the familiar stuff of classrooms: teacher presentation of information, guided practice, drillwork, tutorials with individuals and small groups, or transitions between segments.

When expert and novice elementary teachers are compared in their management of these routine activities via videotaped classroom observation coupled with interviews, the research indicates that the experts are considerably more efficient in their routine practices and that they work in synch with their students. Experts choreograph their classrooms in the first days of the school year, efficiently teaching students how to participate in the various activities of the school day (Leinhardt et al., 1987). By contrast, novices constantly change the pattern of their activities and have few well-practiced routines to work with.

David Berliner and colleagues have conducted related studies within this general research program, focusing particularly on how expert teachers perceive and interpret the flux of classroom life (see Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987; Sabers, Cushing, Berliner, 1991). Their work also reveals that experts are more efficient in processing information, in selectively attending to events in classrooms, and in advancing interpretations about students and activities. Berliner in his research, concludes that expertise develops gradually in stages (see Berliner, 1988); in concert with Leinhardt's research, he argues that efficient routines are a necessary aspect of effective teaching. In their view, teaching is a highly complex activity occurring in an ill-structured, dynamic environment. To manage the complexity, they argue, teachers need efficient routines that help to "reduce the cognitive load and expand the teacher's facility to deal with unpredictable elements of the task" (Leinhardt & Greeno, 1986, p. 76). This perspective complements Schon's, but focuses on the establishment of efficient routines as the necessary foundation for the strategic use of reflection-in-action.

How does the case idea fit with this interest in schemata, procedural knowledge, and the routinized aspects of teaching? Is there a role for cases in acquiring this type of expertise? The answers are by no means clear (for further discussion of this issue, see the exchange between Floden & Klinzing, 1990, and Lampert & Clark, 1990). Leinhardt, for example, speculates that a well-researched, carefully annotated library of videotaped expert lessons (i.e., cases) would be extremely helpful to novices in, "building a rich taxonomy of lesson scripts that are known to be successful" (Leinhardt, 1988, p. 52). Cases would serve to display smoothly articulated classroom processes for modeling and emulation, rather than to provide material for inquiry. And Berliner (1988) wonders whether novices may have inadequate experience upon which to reflect. Better to defer the cultivation of reflective practice to the advanced beginner stage, he argues.

A Role for Cases in Learning Skills and Routines?

Case use in teacher education, based on the four kinds of encounter described above, emphasizes analysis, reflection, and inquiry more than acquisition of action routines, a development that reflects the contemporary interest in cognitive rather than behavioral accounts of complex human performances. But skills training, we suspect, still occupies a prominent place in many teacher education programs. The training model, one version of which has been set forth by Joyce and Showers (1988), relies on modeling, coaching, and guided practice as a time-honored method for acquiring skills and for improving skill-based performance, especially in such fields as athletics and the arts. Within this model, videotapes and other depictions and descriptions of performance serve two purposes—to portray exemplars and to supply feedback on the novice's own performance.

The training model in teacher education has a number of shortcomings that include the problem of transfer and sustained use of skills acquired initially in training; the lack of attention to conceptual underpinnings and rationales that allow practitioners to make flexible, adaptive uses of skills; and the integration of skills or instructional strategies into overall patterns of practice (see Kennedy, 1988). But these problems also point to certain conditions of effective training that include explanation and discussion of theory, rationale, and concepts, and extensive follow-up in classrooms with peer coaches and mentors who themselves have mastered the particular skills and strategies (for review of the literature on training, see Cruickshank & Metcalf, 1990; and Gleissman, 1984). Showers, Joyce, and Bennett (1987) note that

> the purpose of providing training in any practice is not simply to generate the external visible teaching "moves" that bring that practice to bear in the instructional setting but to generate the conditions that enable the practice to be selected and used appropriately and integratively . . . a major, perhaps the major dimension of teaching skill is cognitive. (pp. 85-86)

In training-based approaches to teacher development, then, cases might serve as examples and models within the demonstration phase, and they might reveal the cognitive dimensions of skillful performance. Although many teacher educators supply skills training in such areas as classroom management and particular teaching strategies that involve performance mastery of rules and routines, the case idea is more at home in pursuit of aims framed in terms of decision making, problem solving, and inquiry. Cognitivists are interested in representing action in mind but have not yet demonstrated how cases can serve as tools for the efficient and effective learning of teaching routines.

The Future of the Case Idea

This review has drawn attention to the diversity of theory and practice surrounding the case idea in teacher education. In fields that have strong traditions and conventions of case use, the central questions are relatively settled. These include the form and content of cases, the methods through which cases are developed, their place in the codified knowledge of a profession, their role in the professional curriculum, and the character of teaching with cases. Notably absent, however, is a research literature that explores the nature of learning through cases.

Despite some early efforts to introduce the case method into teacher education, no parallel traditions emerged in this field, raising the question whether the time is now ripe for such a development. A shift in the intellectual milieu of teacher education is underway, we have argued, that supports an interest in cases that would have been inconceivable even a decade or two ago,

given the dominant ideas about knowledge, science, educational practice, and their interrelationship. We have reviewed some of the leading ideas that support the turn to cases in teacher education, but it is fair to note the speculative and contingent character of the arguments and claims as they apply to the case idea. Teacher education is under mounting pressure today to demonstrate its value and its contribution to the larger reform agenda in education. These political pressures help create a hunger for new ideas and practices, including the case idea, and this fervor should induce a certain caution, for a succession of enthusiasms has swept the field, leaving a legacy of disillusionment.

The future of the case idea, we suspect, rests more on development than research, or perhaps on research in the context of development. We mean that the central task ahead is to create and use rich and interesting case materials in a variety of settings for a variety of purposes, while simultaneously studying those uses. There is the familiar chicken and egg problem. To test an idea requires investment in development, training, and implementation across many sites and trials. To secure that investment requires advocacy for a bold idea before it has been tested. This is roughly the state of affairs with the case idea. Although its current status scarcely admits uniform conventions, codifications, or canons, local communities might pioneer shared uses and conceptions of cases, then advertise their practices and results.

The current discussion of cases and case methods contains both a modest claim and a bolder implication, and around each research will be worthwhile. The modest claim is that cases and case methods provide appreciable advantages, over alternatives, for fostering some of the dispositions, knowledge, reasoning, and skills that are wanted in schoolteachers. The bolder implication is that the case idea provides a different way of framing lessons (see, for and doing the business of teacher education that may significantly recast our ideas and practices.

A Modest Program of Research on the Case Idea

We identify three kinds of studies in pursuit of the modest claim. First are explorations that describe and assess the implementation of case methods. Second are comparisons of the case method with other forms of instruction. And third are examinations of the effects of variations in use of the case method.

Implementation studies rely on two sources of comparison. Argyris (1980) provides an example of one source that compares the espoused theory of the case method with the theory-in-use and with the actual teaching. His study of case teaching in a business seminar revealed significant discrepancies between the espoused theory and the theory-in-use. Implementation studies of this sort, based on interviews coupled with classroom observation, can identify some of the difficulties associated with case teaching, help in refining subsequent instruction, and provide a basis for assessing effects on learning. The factors that Argyris draws attention to, including the ways case teachers induce dependence on the instructor and the mutual face saving between students and teachers, are subtle but unmistakable violations of the teachers' expressed purposes and intentions. Close study of actual teaching with cases can contribute a literature useful in helping case teachers to refine their practice.

Studies of classrooms considering the same text (or case) are a second source of comparison useful in revealing how the "instructional text" created through discourse influences learning from cases. A lively line of research has developed that employs multiple theoretical frameworks in the close analysis of text-based

example, Green & Harker, 1988). This form of research involves study of two or more teachers teaching the same text to similar groups of students, then comparing lesson structures, discourse modes, participation patterns, and story recall outcomes. Sociolinguistic perspectives, semantic propositional analysis, and reader response theory are used to analyze the videotaped lesson, lesson transcripts, and story recall data.

Such inquiry reveals the intricate interactions among the author's text, the teacher's instructional text, and the student's reconstructed text. Comparison across classrooms reveals marked differences in the lesson structure, norms of participation, information presented and turns allocated, question complexity, and stress on particular themes and ideas in the text (Green, Harker, & Golden, 1987). Learning from cases, this research suggests, will depend on the interaction among what the text presents, what the reader (or viewer) brings, and what the teacher does with the text in class.

Comparison with alternatives. A second type of inquiry compares case-based teaching with other alternatives. A small literature has emerged that draws attention to the limitations and disadvantages of case-based teaching, and to potential advantages of other forms of instruction (in addition to Argyris, 1980, see Leone, 1989). This work charges that a case curriculum is an inefficient means of conveying the codified knowledge useful to a complex practice; that single, vivid cases fail to help students see underlying issues and develop useful principles and generalizations; and that case discussions lack the impact of experiential learning, substituting instead the analysis of others' experiences. Our review has also raised questions about the relationship of case-based teaching to the acquisition and use of skills and routines in teaching.

This brief mention of the criticisms of the case method suggests research that compares case teaching to other instructional approaches to determine relative effectiveness. However, this type of research suffers from a number of well-known defects in experimental comparisons that include the substantial within-treatment variation relative to cross-treatment differences (characterized either as uneven implementation or as treatment by setting interactions), and the differences in aims and outcomes associated with different approaches to instruction. One solution to these difficulties is to study case teaching in particular settings using a range of outcomes, implementation measures, and data collection methods that allow a balanced appraisal, including attention to outcomes for which case methods may produce weak results. Similar studies of other instructional methods will reveal different patterns of outcomes and so allow some comparative judgments. The utility of such research lies in determining the relative advantages of case-based teaching judged against a range of desirable objectives.

Exploring variations. A third type of inquiry explores patterns and effects of variations in curriculum and instruction with cases, within the context of design and development. In light of the diversity of practices that are emerging, case developers and users confront a range of choices about cases–their length, genre, medium, theoretical specification, and others–and about case encounters. What has influenced these choices to date have been the theoretical and value orientations of developers together with their purposes. But within particular development projects, investigators may begin experimenting with design variations, exploring effects on learners and learning.

For example, in the context of elementary education, rather than teacher education, the Cognition and Technology Group at Vanderbilt (1990) prefers visual rather than textual formats for cases because they

> allow students to develop pattern recognition skills (a major disadvantage of text is that it represents the output of the writer's pattern recognition processes). . . . Video allows a more veridical representation of events than text; it is dynamic, visual, and spatial; and students can more easily form rich mental models of the problem situations. (p. 3)

Claims such as these, for the importance of the case medium in this instance, are worth testing in the context of design and use.

The aim of such inquiry is to refine case methods based on modest evidence of effects. Theoretical hunches of various sorts, however, might guide developmental inquiry around such questions as the effects of literary properties of narrative on student learning; the relative merits of utilizing many short vignettes versus extended "paradigm" cases; the effects of various kinds and degrees of contextual detail in written and video cases; the situating of cases in simulations, field experiences, liberal arts courses, and other contexts of use; the sequencing of theoretical material with case particulars; and the role of cases in introducing innovative practices into the repertoires of novices.

Toward the Bold Claim for the Case Idea

Research directed to the modest claim examines variations in the design and use of case methods in teacher education, as guided by theoretical hunches and as anchored in effects on learning. Various strategic comparisons will be useful for this kind of research: between espoused and actual case methods, across classrooms utilizing the same cases, between case-based and other instructional approaches, and among variations in case designs and activities. But case advocates also have advanced a set of fundamental claims about knowledge in teaching, learning to teach, and the community of practice that deserve attention. These bold claims are difficult to study because the proposed practices are not available, but we conclude our review with some suggestions around four central issue: the character and significance of case knowledge; methods for identifying, testing, and using teachers' craft knowledge; the prospects for a curriculum of cases; and the creation of settings within which teachers, researchers, and teacher educators may jointly pursue the case idea.

Case knowledge in learning to teach. The bold claim rests on a number of assumptions about knowledge in teaching and learning to teach that challenge reigning ideas. The central claim is that "cases in teaching are important . . . not simply because they convey the complexity of classroom life, but also because they are probably the form in which teachers' meanings are stored, conveyed, and brought to bear" (Doyle, 1990b, p. 356). Knowledge in teaching, this view asserts, is particularistic and situational, intimately connected to the contexts and events of teaching. Consequently, the most effective way to represent knowledge in teaching is through cases that capture both the routines and the problematic, unique situations that call for reflection, analysis, and continuing inquiry.

This perspective draws insights from the theories of situated cognition and expertise, but raises many questions. What kinds of cases situationally encode teaching knowledge? How does exposure to case-based knowledge help novices form principles, generalizations, and routines that are integrative and economical? What is the role of general cognitive skills versus domain specific knowledge in learning to teach with cases? and

What are the implications of this issue for the design of cases? What patterns of case-based instruction promote transfer of knowledge and skill to situations in teaching? How does case teaching modify novices' prior beliefs, values, and assumptions? How does this view of teaching knowledge accommodate the introduction of innovative practices through case teaching? Conceptual and empirical work are needed to address these and related questions.

Identifying craft knowledge. A second part of this program to reconceive teaching knowledge will explore methods for identifying, testing, and sharing teachers' craft or case knowledge. If the wisdom of practice in teaching is essentially ineffable, if tacit knowledge cannot be made explicit or tested for its validity and applicability, then there may be few implications for teacher education. The hope is to discover ways of tapping the wisdom of practice as a source of knowledge that could be represented in the curriculum of teacher education. Such methods might include encouraging teachers to construct case narratives and commentaries and to report on their responses to common problems of practice; videotaping and annotating classroom teaching that directly portrays craft wisdom; and constructing theoretically guided observer accounts of teaching that the teachers of record may subsequently modify, amplify, and interpret.

The case-based curriculum. The most ambitious project in pursuit of the bold claim is to construct and test a curriculum of cases. This is a logical extension of the claim that knowledge in teaching is case-based. Lee Shulman (1992) reflects this view in arguing that "the [teaching] field is itself a body of cases linked loosely by working principles, and case methods are the most valid way of representing that structure teaching" (p. 17). Case methods, he asserts, constitute the appropriate strategy for transforming propositional knowledge into "narratives that motivate and educate" (p. 17). These assertions capture the bold implication of the case idea most directly and point to a curriculum of cases.

The precedents are available in other fields, notably the law, but that analogy is likely inapt for teacher education. There is another history to consult for leads: the experiments in other fields that break with curricular orthodoxy to redesign fundamentally the professional studies program. Medicine offers several examples, including the development of a problem-based curriculum in several universities around the world. The familiar and longstanding division into liberal and professional courses, the foundations-methods-clinical practice sequence, and the foundationalist construal of theory-into-practice are not so well regarded nor so obviously effective as to preclude program redesigns based on the central use of a variety of cases. The full test of the case idea in teacher education awaits such bold trials.

Collaborative organization. Finally, the turn to cases in teacher education reflects an interest within the academy in drawing closer to practice, and in exploring new means of connecting practice and research (for an expression of this trend, see the report from the National Academy of Education, 1991). Cases serve as a natural site for collaboration among researchers, teacher educators, and teachers, and case development may serve as a crucial activity in the formation of new professional communities. But this prospect's promise will depend on new institutional arrangements that support regular, long-term, collaborative work. Professional Development Schools (see the Holmes Group, 1990) could serve as one site for such inquiry. This review has emphasized the importance of narrative, discourse, and forms of reasoning cultivated within communities of practice. We believe that the full exploration of the case idea will require as much attention to the formation of community as to the technical tasks of development and research.

Social inventions will be necessary that bring teachers into productive relations with university colleagues, and so the efforts underway around the country to establish school-university partnerships may eventually support aggressive development of the case idea.

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