Chapter 3

"Boundaries of Teachers' Professional Communities in U.S. High Schools"

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THE SUBJECTS IN
QUESTION

Departmental Organization
and the High School

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Chapter 3

Boundaries of Teachers' Professional Communities in U.S. High Schools
Power and Precariousness of the Subject Department

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Much of the literature on productive "school community" suggests that desirable conditions of teaching and learning are largely a matter of effective site management. When teachers share educational goals, have coherent plans for curriculum and instruction, and collaborate to promote student learning, it often is assumed that they are responding to administrative controls or leadership and that the pattern is schoolwide. In this "top-down" view of teachers' professional community, the school administrative unit is seen as the logical or appropriate boundary for assessing teacher community—a school has more or less of "it."

This chapter calls into question the primacy of the school organization unit as a context of professional community for secondary school teachers. It builds upon CRC research on the multiple, embedded contexts of teachers' professional community (see McLaughlin & Talbert, 1992, for a description of the research program and database). Conceiving of teachers' work as varied within and across high schools, our research took a bottom-up, teachers'-eye perspective on the boundaries and meaning of professional community. In this view, boundaries of teacher communities are defined by answers to such questions as: Who/where are the colleagues who share my sense of what should be taught and learned? Who understands my day-to-day teaching tasks? Who can support me in my work?

Data from our large field sample of secondary schools showed that high school departments are salient and powerful contexts for
teachers and teaching. Here I highlight findings from quantitative analyses showing significant variation between departments within schools on the strength of teacher community and related aspects of professionalism. I then take up the question of what accounts for the variable strength of department communities observed in our field sample. I make problematic the department boundary for teacher community and describe potentials for subcommunities of high school teachers to evolve within and beyond the high school department. My analysis considers ways in which specific conditions of U.S. education—multiple and competing goals, local inequalities in teachers' subject backgrounds, and subject education reforms—promote specialized teaching jobs, identities, and interests that can undermine subject departments as contexts for teacher community.

The chapter draws upon published and unpublished research conducted within the CRC. One set of studies uses data developed between 1989 and 1991 for 16 public and private schools in California and Michigan (all have been pseudonyms); it includes in-depth analyses of the math and science departments in eight CRC comprehensive public high schools. Other data reported here derive from ongoing research in a small sample of California math and science departments that are immersed in local, state, and national movements to reform subject instruction. Cases are used to illustrate differences in the strength and character of math and science department communities that we have observed over the course of our research in diverse California districts and schools.

Throughout, the notion of strength of teacher community is conceived in social system terms—in terms of teachers' collegiality, collaboration, and discourse (versus privacy and autonomy) within a particular context. This definition does not imply shared professional/subject identities or shared technical culture, as in Van Maanen and Barley's (1984) notion of occupational community. It is narrower analytically, allowing for high levels of collaboration among teachers with different subject identities, for example. It also allows for variable degrees of consensus or dissensus among teachers—strong communities with a clear technical culture, in which common views of teaching are enforced, or communities in which professional disagreements and debate are celebrated. In short, I distinguish strength and character of department communities.

Attention to multiple and varied contexts and cultures of high school teaching is important during this era of U.S. education reform—when new standards for subject instruction, strategies for professionalization, and approaches to school restructuring all aim to
improve teaching and learning. An understanding of the broader contexts and local contours of teachers’ work lives is essential to crafting reform strategies. More than ever before, policy makers and high school teachers alike need to appreciate conditions in education that shape potentials for teacher community and norms for educational practice.

SUBJECT DEPARTMENTS AS PROFESSIONAL COMMUNITIES

A growing body of literature documents the salience and power of subject departments in high school teachers’ work lives. For better or for worse, collegial relations and norms of practice within a department appear to matter for how teachers experience their profession and construe their tasks (Siskin, 1994). Although strong traditions in teaching establish norms of privacy and autonomy for collegial relations (Little, 1982, 1990), we have begun to document considerable variation in subject departments’ tendencies to enforce the privacy norms or to supplant them with norms for collaboration and collective learning.

Until recently, most U.S. research concerned with school community ignored or discounted the role of subject department communities in shaping high school teachers’ work and students’ educational outcomes. In large-scale survey research on teacher community (see, for example, Bryk & Driscoll, 1988; Newmann, Rutter, & Smith, 1989), departments were neglected both because of the strong “school effects” tradition framing the research and because teacher samples typically yielded department-level N’s too small to warrant analysis.

Field-based studies of high schools conducted during the 1980s reached widely divergent conclusions about the significance of subject departments for teachers and teaching (see Little, 1990, pp. 198–204, for extensive review of this work). One prominent analysis of conditions in three high schools concluded that departments were weak administrative units without intellectual significance (Cusick, 1983). While a number of other studies found departments to be potent contexts of teaching, the researchers disagreed on the significance of departments for teachers and teaching. Some portrayed high school subject departments as negative, conservatizing forces—undermining school community, fragmenting the intellectual agenda of schooling, and inhibiting teachers’ innovations (Hargreaves, 1987). Yet others saw subject departments as professional communities that might support teachers’ efforts to improve their practice (Johnson,
In their classic study of English departments, Stephen Ball and Colin Lacey (1984; Chapter 4, this volume) showed how department colleagues sustain teachers' subject identities and commitments, even when alternative subject paradigms support distinct subcommunities within a department.

The disparate findings from field studies of high schools and departments make clear that one cannot generalize about the strength, character, or consequences of high school department boundaries and communities. As with subunits in organizations more generally, the strength of high school department boundaries is properly taken as a variable for analysis (Scott & Cohen, Chapter 2, this volume). Similarly, the content or character of strong department communities can be taken as variable and problematic—since some technical cultures within a subject embrace innovation and others inhibit change. The CRC database, with quantitative and qualitative data for over 700 teachers in a large field sample of diverse high schools, enabled us to explore variation and patterns in department community boundaries and cultures.

Leslie Siskin's in-depth research on teachers' work lives in the CRC sites of Rancho and Oak Valley (California) and Highlander (Michigan) pointed to variability in strength of department boundaries within and between schools (1994; Chapter 1, this volume). While Siskin highlighted the power of high school departments as subject enclaves and as organizational bases from which teachers compete for scarce resources, her analysis considered factors that strain department community and that shape particular department cultures.

Quantitative analyses of teacher survey data for all CRC sites also pursued issues of the power and variability of department-based teacher community. In this section, I summarize research showing the independent role of departments as contexts of teacher community—as boundaries for community and as having distinct effects on aspects of professionalism (Talbert & McLaughlin, 1994). Subsequent sections report findings from quantitative analyses and case studies of differences in the strength and character of math and science departments in CRC public schools (Galguera, 1994; Ma, 1994; Talbert & Perry, 1994; Yu & Talbert, 1994).

### Strength of Department Boundaries of Teacher Community

Quantitative analyses of collegiality across the embedded CRC teaching contexts (sector, district, school, department) allowed us to make the case statistically that departments constitute independent
contexts of professional community for high school teachers. For this analysis, we used a measure of collegiality based on teacher survey reports of support teachers received from colleagues and the extent of cooperation and ongoing learning among teachers. Because of sample size constraints, only the four core academic departments were included in the analysis.

The department "effect" on collegiality was defined as between-department variance net of variance observed between schools and between the subject areas. In other words, if departments within the same school and within a common subject area could be shown to vary significantly from one another in strength of collegial relations, then we could conclude that departments were important contexts for teacher community (apart from whatever community was forged within higher levels of the system or by a subject culture). Department differences in teachers' collegial relations were shown to be statistically independent of both school and subject differences (Talbert & McLaughlin, 1994).

In fact, school effects estimated in this study were barely significant. The between-school variance in strength of teacher community was largely swamped by differences at the district level and diminished by comparison to differences between subject departments. Certainly, department and district boundaries for teacher professional community appeared in this study much stronger than the school-effects and effective-schools literatures lead one to believe.

We also addressed the question: For what does each of the embedded school contexts matter in teachers' professional lives? Is the role of the high school department distinct from that played by the district, for example, or by the subject as a knowledge and teaching culture?

Isolating Department Effects on Teacher Professionalism

Using indicators of teacher professionalism, we evaluated how particular teaching contexts related to qualitatively distinct aspects of teacher community. Our analysis of variance included survey measures of three dimensions of teacher professionalism—technical culture (shared instructional goals and beliefs), service ethic (caring and high expectations for students), and commitment to the profession (engagement in teaching).

We found that academic departments in CRC comprehensive high schools varied significantly on all aspects of professional community, independent of both school and subject differences (Talbert
School-related variance on dimensions of professionalism were not shown in this analysis, apart from small effects for teacher collegiality. However, we found significant district differences in teachers' expectations for their students' achievements (service ethic) and level of commitment to the profession (see also McLaughlin, 1992). Subject differences were shown for strength of technical culture. This finding is consistent with other analyses of CRC survey data showing that math teachers, on average, report higher levels of agreement on subject matter and teaching practices than do teachers of the other academic subjects (Grossman & Stodolsky, 1994; Stodolsky, 1995; Talbert & Perry, 1994).

Results of these analyses are summarized in Figure 3.1. The arrows show how each of the embedded teaching contexts relates to particular aspects of teachers' professional community. In general, contexts or boundaries of professional community have different, specific meanings for teachers' work lives. The school unit, however, appeared to have highly circumscribed meaning for teachers in these typical comprehensive public high schools.² Notably, subject departments showed significant, independent variance on all aspects of teacher community and professionalism analyzed in this study—collegiality, technical culture, service ethic, and professional commitment.

FIGURE 3.1. How Embedded Contexts of Teaching Shape Aspects of Teachers' Professional Communities: Summary of Statistical Analyses

Note: Statistical data are reported in Talbert & McLaughlin, 1994, Table 2, p. 137, and Table 3, p. 139.
This study further considered how the strength of department communities related to criteria of professionalism: Were strong departments also more professional cultures? We examined correlations among the department community and professionalism variables for the 32 academic departments in our sample of eight comprehensive high schools. We found that the relatively strong department communities had higher levels of technical culture, or shared teaching standards, and professional commitment (Talbert & McLaughlin, 1994).

However, we also found that the strength of academic department communities was not positively related to the professional service ethic (caring and high expectations for students). This finding we attributed to opposing effects of qualitatively different academic teaching cultures—those embracing traditional versus reform standards. Some academic department faculties in our sample organized to enforce definitions of specific kinds and amounts of subject knowledge to be acquired by students in particular courses; they tended to see their job as transmitting and testing knowledge and to regard student course failures as evidence of high teaching standards. In striking contrast were strong department communities in which the faculty labored to change their teaching routines to make subject matter more accessible to the nontraditional students in their classes; they worked from their commitment to students to reshape subject instruction. Our quantitative analyses were not sensitive to these different versions of strong technical culture in academic departments; their strong negative and positive relationships with the service ethic canceled one another in the aggregate (see McLaughlin & Talbert, 1993a, 1993b, for further discussion of these contrasting teaching cultures).

Findings from our comparative analyses of academic departments in diverse school settings help to explain differences in the conclusions reached through earlier field studies. We found significant variation in the strength of department communities; some were weak administrative units, others were dynamic professional networks. Among the strong departments, we found greater consensus on teaching practice and stronger commitments to teaching. However, as from earlier field studies, our findings were ambiguous on whether or not strong academic departments enable or constrain effective instruction. Some promote and others inhibit teacher learning and successful adaptation to nontraditional students and new standards for subject instruction.

Further, a substantial amount of variance in collegiality and professionalism was not explained by department or other boundaries of
teacher community in these quantitative analyses. There is good reason to suspect that at least some of this unanalyzed variance is associated with subcommunities within departments (for example, Ball & Lacey, 1984; Chapter 4, this volume).

Observations of the importance and puzzles of teacher community in academic departments lead us to examine in more depth the contours and strength, evolution and content of department communities. We focused especially on math and science departments in California, since national and state reform in these subjects presented press and opportunity for changes in curricula and teaching and in the strength and character of department communities.

**THREATS TO SUBJECT DEPARTMENT COMMUNITY**

The power of subject departments to frame teachers' professional community in secondary education derives from the intersection of institutional patterns and local organizational structures—subject cultures and controls in the wider educational environment, on the one hand, and high school department organization, on the other hand (Siskin, 1994, Chapter 1, this volume; also Scott & Cohen, Chapter 2, this volume). Many strands of the current educational reform movement are framed by subject, and so the institutional environment increasingly promotes the subject boundary of teachers' professional lives (see introduction, this volume).

However, other conditions in U.S. education threaten the unifying power of subject cultures and the strength of department boundaries as a locus of teacher community. Sources of differentiation, dissensus, and dispute within high school department faculties include

- Multiple and competing education goals.
- Inequalities in teachers' subject specialization
- Subject education reforms

Variable boundaries of teacher community and the uncertain character of subject department communities can be understood partly in terms of how districts, schools, and departments resolve tensions rooted in such conditions and dynamics of U.S. education. As Scott and Cohen observed in Chapter 2, much of what goes on within schools expresses their institutional environment.

In subsequent sections of this chapter, I analyze the problems
and potentials for teacher professional community as an *interplay* of institutional, organizational, and social system conditions of teaching (for argument in favor of this theoretical integration, see Talbert and McLaughlin, 1994). Each section takes up a particular condition or set of tensions inherent to U.S. education and considers how its resolution—through organizational and social-normative means—enhances or undermines the department as locus of teacher community. The analyses highlight threats to department community but also illustrate how department professional cultures mediate the disintegrating forces.

**Goal and Student Diversity:**
**School and Track Differentiation**

Public school teachers and administrators, as well as analysts of school organization (for example, Meyer & Rowan, 1977; Weick, 1976) and the teaching profession (for example, Little, 1990), often comment on the enormous range of goals prized in American public education. Multiple goals for student development include basic academic skills, good work habits, academic excellence or subject mastery, personal growth and self-esteem, human relations skills, citizenship, occupational skills, and moral values. In U.S. public high schools, unlike secondary schools in most other nations, emphasis also is placed on athletics and competitive team sports; and vocational programs generally are not segregated from academic programs. In short, our country demands that teachers and schools simultaneously pursue a wide range of educational objectives for a wide diversity of students.

Goal diversity in U.S. education presents multiple and sometimes competing bases for teacher community. The goals compete for scarce resources, including teachers' and students' time and attention; they are either juggled by individual teachers and faculties or compartmentalized into specialized programs and curricula. In either case, multiple education goals make problematic a sense of shared mission and common goal priorities among U.S. teachers. Members of a school or department faculty are likely to disagree on instructional priorities; or they may have specialized jobs linked to one or another educational goal and compete for collective resources. Teachers' passions and instructional choices can be captured by any one of the broad educational goals, and when teachers in the same faculty march to different drummers, they may become distant colleagues if not antagonists (see Little, 1990, for further discussion).
School Specialization. One organizational strategy for managing multiple and competing education goals is to establish specialized schools identified with one or another education priority. In theory, school administrators can establish good fits between the goal preferences of particular parent communities, needs of particular students, and professional values of teachers and school administrators. Schools with clear goal priorities could be organization contexts for strong, schoolwide professional community among teachers.

The CRC sample included schools in the private sector that were highly specialized in their goals and student populations. Paloma selected students high in academic achievement and emphasized the goal of excellence in core academic subjects. Greenfield and Prospect served academically unsuccessful youth and emphasized the goals of developing students' self-esteem and human relations skills.

Figure 3.2 shows how teachers' goal priorities in these specialized high schools differed from national norms. While the typical U.S. high school places highest priority on basic skills and good work habits, the academic elite school emphasized academic excellence, and the alternative schools emphasized personal growth and human relations skills. Both types of specialized school missions appeared to promote strong teacher community. Indeed, almost all of the between-school variance in teacher community observed for the CRC sample was accounted for by high scores for these special schools versus those for typical, comprehensive schools (Talbert & McLaughlin, 1994).

However, such specialized schools are exceedingly rare in U.S. public education. Using 1984 teacher survey data from the High School & Beyond program, we estimated that only 4% of U.S. public high schools have either of these specialized missions (see Talbert, Eaton, Ennis, Fletcher, & Tsai, 1989, for a full report on this analysis and goal profiles for other CRC schools). In the vast majority of high schools, faculties somehow balance the alternative priorities, at least among the top four goal domains (basic skills, work habits, academic excellence, personal growth). They appear to do this through substantial goal specialization or dissensus within the same school, as evidenced statistically by large standard deviations for each goal's ranking within schools.  

While consistent with rational organization logic, the strategy to accommodate multiple goals through a functional division of labor among schools goes against institutional norms. The comprehensive school model is highly institutionalized in American secondary education. In effect, competing goal priorities must be accommodated
FIGURE 3.2. School Types by Goal Profile

U.S. Average: Public High Schools

CRC Field Sites

Elite academic high school

Alternative high schools

BS = Basic Skills  HR = Human Relations Skills
WH = Good Work Habits  C = Citizenship
AE = Academic Excellence  OS = Specific Occupational Skills
PG = Personal Growth  MV = Moral or Religious Values

Note: The goal profiles are based on teachers' survey data. The question asked teachers to rank eight educational goals (see key) in order of their importance in his/her own teaching. The national profile used data from the HS&B Administrator and Teacher Surveys. The mean rank for each goal could vary from 8 (highest) to 1 (lowest).

within most U.S. high schools, potentially undermining teacher community.

Subject differences in goal emphases help to meet the challenge to comprehensive high schools of balancing education priorities. English teachers, for example, place relatively greater emphasis on students' personal growth (Ball & Lacey, 1984, Chapter 4, this volume; Grossman & Stodolsky, 1994; Siskin, 1991, 1994; Stodolsky, 1993).
Such subject-based differences in teachers’ goal priorities express and enforce department boundaries for teacher community. However, other bases for teachers’ goal specialization undermine teacher community within subject departments.

**Tracking in Comprehensive High Schools.** A common source of differentiation in teachers’ assignments and goals within a subject area is course and student tracking (otherwise referred to in American high schools as “streaming” or “tracking,” to avoid connotation of a formally stratified curriculum). While tracking is not legitimated and varies considerably across schools (Garet & DeLany, 1988), the practice is highly institutionalized in American education (see, for example, Gamoran, 1987; Lee & Bryk, 1988; Oakes, 1985, 1990; Rosenbaum, 1976; Useem, 1992; Vanfossen, Jones, & Spade, 1987). The practice mirrors incompatible coexisting agendas for students’ educational outcomes—the academic and vocational goals and the excellence and basic skills objectives for academic achievements; it is enforced by higher education through such institutions as Advanced Placement and course weights for college admissions.

Differences in teachers’ goals, content, and practices between tracked high school classes have been documented (for example, Oakes, 1985; Raudenbush, Rowan, & Cheong, 1993; Talbert & DeAngeles, 1994). Emphasis on academic excellence and higher-order thinking is strongest in classes of relatively high-achieving students within a comprehensive high school, with other goals for American education channeled downward in the academic-achievement hierarchy.

The tracking phenomenon plays out in high school department cultures in various ways. In our CRC sample, we found considerable variation in academic departments’ tendencies to track their courses and students (see Table 3.1). While math and English departments showed highest levels of class tracking, and social sciences showed the least tracking, variation between departments within each subject was substantial. As reported in Table 3.1, the CRC academic departments also varied substantially in extent of teacher tracking—the practice of assigning particular teachers to mainly high-level classes or mainly low-level classes. Teachers are considered “tracked” when they are assigned exclusively, or nearly so, to one level of class; teachers who teach a wide range of classes are considered to be “untracked.” It is therefore possible for a department to track students into high and low classes, but to have no instances of teacher tracking. Prior research shows how teacher tracking both expresses and
### TABLE 3.1. Class and Teacher Tracking by Subject Department: CRC Public Comprehensive High Schools

<table>
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<tr>
<th>SCHOOL</th>
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<th>DEPARTMENT</th>
<th>SOC. STUD</th>
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<td>High(%)</td>
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<td>11</td>
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<td>0</td>
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</table>

1. Classes were classified as low or high track on the basis of three sources of data: a) the course title included "honors," "advanced," etc., or "remedial"; or b) the teacher reported the class as advanced/honors track or as vocational track; or c) the teacher described the students in the class as way above the school norm or way below the school norm.

2. Teacher tracking is reported as the percentage of the department faculty with predominantly low-track classes and the percentage with predominantly high-track classes. A teacher classified as "low track" had 3–5 low-track classes and no high-track classes. Conversely, a teacher classified as "high track" taught 3–5 high-track classes and no low-track classes.
enhances inequalities among teachers in a subject faculty or school (see Finley, 1984; Talbert with Ennis, 1990).

Here I consider teacher tracking as a potential source of subcommunities within the high school—as defining student and course track boundaries for teachers' shared goals, instructional tasks and interests, and collaboration. My analysis focuses on the core academic subjects and treats student and teacher tracking as a matter of stratified course assignments within a subject. The analysis thus ignores stratification and teacher community boundaries between academic courses and vocational courses such as auto mechanics, business, home economics, and wood. Judith Warren Little (1993) and Susan Threatt (Little & Threatt, 1994) offer substantial evidence and argument that a schism between vocational and academic subjects and teachers in comprehensive high schools has profound implications for teachers' professional identities, status and resources, and collegial relations.

By limiting my analysis to course and teacher tracking within the academic subjects, I present a conservative picture of the role of student and teacher "tracks" as boundaries of professional community in U.S. high schools. Further, my analysis probably exaggerates the potential for faculties to socially construct the phenomenon and meaning of course and teacher tracking, since the unequal educational status of academic versus vocational subjects is enforced by U.S. higher education institutions.

Nonetheless, an academic teacher's assignment to teach mostly low-track classes or mostly high-track classes in a subject can be a powerful basis for professional identity and access to school and collegial resources. National survey data suggest that, on average, low-track teachers are less well-integrated with teacher communities in their school (Talbert with Ennis, 1990). Our field research suggests that low-track teachers also can form a distinct professional community. However, the power of teacher tracks to define subcommunities within or across subject departments appeared to depend on the dynamics and meaning of teacher tracking in the professional culture.

The school's professional culture and balance between high-track and low-track teacher assignments in a department appeared to condition the salience and significance of teacher tracking. In CRC schools that emphasized academic excellence, like Onyx Ridge, we saw a tendency toward "high tracking" within the faculty (see School 07 in Table 3.1). The high-track teachers in such schools tended not to form an elite "echelon" across subjects, however. Teacher network data for Onyx Ridge and a similar school, Oak Val-
ley (School 10 in Table 3.1; see Siskin, Chapter 1, this volume, for network data and further description of the site), showed no ties between high-track teachers across subjects but many ties between the high-track teachers and their subject colleagues. The network data suggest that high-track teachers in these predominantly middle-class school cultures served as instructional leaders in their departments but did not define a distinct department or school subcommunity.

Teachers assigned to low-track classes in such settings, however, perceived that the school tradition and department cultures were out of sync with needs of “their” students. They formed a potential, occasional, and shifting professional community based in concerns for the marginal students in the school. These individuals often felt disenfranchised. In such school cultures, the salience and significance of teachers’ low-track assignments derived from the students’ deviant status in the school culture, the educational goals and values embraced by teachers for the low-achieving students, and limited access to school resources.

The stability of teacher track assignments (vs. rotation) also conditioned effects of teacher tracking on professional identities and community in high school departments. For example, the Esperanza math department showed moderate levels of teacher tracking but high rates of rotation. Rancho’s math faculty, in contrast, was relatively fixed in their track assignment (these schools are in the same district and had similar distributions of faculty qualifications; see below and Yu & Talbert, 1994, for further analysis of these cases).

A snapshot view of teacher tracking in a subject department cannot reveal course assignment policies or the meaning of a teacher’s track placement in the department culture. As described below, a key issue is whether or not teachers’ relative subject preparation is considered a “given” and the basis for their track placement. In such cases, teacher tracking defines status inequalities within the department community that can inhibit full collegiality between faculty strata.

Teachers’ Subject Preparation:
Department Boundary Problems

A related threat to strong department community is variation in the subject preparation of teachers in a department—what Little (1990) referred to as the “collective competence” (p. 203) of department members. In a study of labor force conditions in CRC math departments, we found substantial variation in faculty subject preparation (Galguea, 1994; Yu & Talbert, 1994, provide comparable evi-
FIGURE 3.3. Percentage of CRC Mathematics Teachers with at Least a Bachelor's Degree in Mathematics

Note: See Yu & Talbert, 1994, for additional breakdowns of teachers' math backgrounds in these CRC sites.

dence for CRC science departments). As shown in Figure 3.3, some departments were uniformly specialized in mathematics; in others, half or more of the faculty lacked a math major.

While empirically related to teacher tracking, inequalities in teachers' subject preparation in a department have different institutional roots and organizational significance and so should be treated separately. As data from our embedded CRC state-district-school sample illustrate, differential teacher preparation within a subject department derives from state education policy, enrollment trends, and unequal attractiveness of districts and schools. In California, a strong education reform state, increased emphasis on students' coursework in mathematics over the past decade, coupled with population growth in some areas, created serious shortages of well-prepared math teachers. State comparative data show low levels of subject preparation among high school math teachers in California (around 65% with BA or higher degrees in mathematics), although local vari-
tion in department faculties’ qualifications is substantial (Yu & Talbert, 1994). Ironically, reforms designed to enhance education in a subject domain can undermine the strength of subject faculties, the quality of instruction in subject courses, and the strength of subject departments.

Departments in our field sample received teachers marginally qualified to teach the subject either as new recruits to the school (common in least desirable districts or schools with high teacher turnover) or as “cross-over” teachers from other departments. In CRC California sites, split assignments generally resulted from policy-related shifts in demand for particular subjects; teachers in low-demand subjects like vocational fields, music, and the arts were reassigned to teach math classes. Shifts in teachers’ subject assignments in Michigan sites followed declining student enrollment and loss of teaching jobs, as Siskin (1994) observed in Highlander; teachers with seniority were reassigned to subjects in which junior colleagues lost jobs.

Substantial inequality in the desirability of district and school teaching positions was the major source of local variation in department subject preparation across CRC math departments. Large urban districts with high proportions of poor and minority students have considerable trouble recruiting and retaining highly qualified faculties; subject faculties in these settings generally have bimodal subject backgrounds (Oakes, 1990; Yu & Talbert, 1994).

Our conception of subject area departments as an intersection of subject cultures and school structures is challenged by such messy realities of teachers’ work lives in high schools. The presence of cross-over and ill-prepared teachers assigned to teach in a subject blurs department organization boundaries and blunts the strength of subject cultures to shape strong teacher communities. These conditions complicate analysis of high school departments as core contexts of high school teachers’ community.

Effects of labor force conditions on teacher community are not simple and direct, however. Teacher professional cultures played a major role in mediating effects of underprepared faculty, as shown by contrasts between the Esperanza and Rancho math departments. These departments are located in the same district, and each is unusually weak in faculty’s subject preparation, with only 50% having majored in mathematics (see schools 02 and 03 in Figure 3.3).

In Rancho, math teachers were assigned to classes largely on the basis of their subject preparation. Classes rarely were rotated among the faculty, and teachers’ specialized assignments were designed to
match their level and kind of expertise. In fact, when a Rancho teacher of an advanced math analysis class transferred to another district school, the chair complained that this position was left vacant and no one else (but the chair) was qualified to teach the course. Teachers of low-level math classes remained the same over the 3 years of our study. The premise in this department culture was that teachers' formal education background fixed their competence to teach mathematics; those lacking math backgrounds were relegated to the low-track classes. The low-track assignments of "underprepared" Rancho math teachers signaled and enforced their marginal status in the department's subject community.  

In Esperanza's math department, the meaning of teachers' formal subject background was substantively different. The stratifying effects of formal education found in Rancho were largely missing in this math department. Indeed, our interviews with Esperanza math teachers revealed that colleagues' math learning and professional growth were a core value in the department culture. This math department formed a strong learning community for teachers and prided itself on having prepared four teachers for teaching calculus. Course assignments were rotated from year to year, and teachers' statuses were defined neither by their formal education nor by the achievement level of students in their classes (see Yu & Talbert, 1994, for detailed case studies of the Rancho and Esperanza math departments). Differences between the Rancho and Esperanza math departments relating to teacher learning opportunities are expressed quantitatively in Figure 3.4. On average, math teachers in Esperanza reported levels of colleague support for professional growth that were well over one standard deviation higher than those reported by Rancho math teachers.

While the presence of teachers lacking subject preparation and identity in a department can threaten teacher community, overspecialization within a faculty also can undermine department boundaries of teachers' professional community. For example, analyses of CRC science department communities found that biology, chemistry, and physics specialties can define distinct identities and collegial units within science departments. Tomas Galguera (1994) observed that science teachers' specialized backgrounds and course assignments can compartmentalize teacher communities within the same department. He quoted a physics teacher's written response to our survey question asking respondents to list colleagues with whom he or she regularly discusses teaching: "No one. I'm the only physics teacher."

In our cross-case, quantitative analysis of strength of science de-
partment communities, we found a high correlation between teachers' science preparation and community strength. Combined with evidence that subfields are important bases for teacher collegiality in science, these findings suggest that high levels of department collegiality may imply the existence of strong subcommunities in the departments (Talbert & Perry, 1994). The case of science departments, in which subcommunities revealed in qualitative data are hidden by high department-level scores on collegiality, illustrates why it is important to integrate qualitative and quantitative analyses of subject department communities.

Competing Technical Cultures:
Professional Dispute in Math and Science Departments

A major movement to reform primary-secondary education has been underway in the United States since the mid-1980s. A key thrust of the reform movement has been efforts among educators in most subject areas to transform school curricula and modes of teaching and learning (most notably National Council of Teachers of Mathematics, 1989, 1991). The subject reforms aim for a new vision of "teaching for understanding," which requires that teachers move away from
transmitting factual knowledge and toward facilitating students' active engagement with complex problems and concepts in the subject (see Cohen, McLaughlin, & Talbert, 1993, for extensive discussion of this reform movement and its demands on teachers).

Despite evidence that subject reforms are proceeding at a very slow rate (Cohen, 1988; Cohen, McLaughlin, & Talbert, 1993), we found considerable turmoil about mathematics and science education within some California high schools. It appears that substantial and sustained state education reform efforts targeting these subjects have found their way into collegial discourse about subject instruction, if not so noticeably into classroom practice or so uniformly into subject department communities. CRC data also suggest that the reforms promote effective teacher adaptations to changing student populations in contexts with relatively strong teacher communities (see McLaughlin & Talbert, 1993a, for evidence of the interaction effects of reform and teacher collegiality on adaptations to students).

A more up-close look at the reforms in diverse department communities revealed their power to divide or unite the faculty. Findings from ongoing CRC research illustrated radically different consequences of the reforms for teachers' work lives. In some cases, the theme of subject reform was at the root of growing schisms between groups of teachers; in other cases, the reforms fueled teacher collaboration and professional growth.

The Jefferson High science faculty, in a large inner-city California high school, became deeply divided over the reform agenda for science education. Like Ball and Lacey’s (1984) English teachers, science teachers in Jefferson High embraced distinct philosophies of teaching and learning. Given external press for educational change, faculty differences in teaching philosophies and goal priorities came to the surface, and teacher subcultures began to emerge within this department. As the principal brought in science reformers to lead department change, the line between old and new guards became clearer and clearer; subject subcultures came into open conflict.

A core issue dividing the faculty concerned the impact of science education reform on student grading practices. One group believed that the reformers “have no standards”—that group projects and products undermined the value and rigor of individual student grades, for example. Reformers referred to this group as “the dinosaurs” and explained how they undermined department success. An indication of the depth of the schism in the department was the fact that science reform critics also referred to themselves as “dinosaurs.” Each group was strongly committed to standards for science educa-
tion. But the standards were radically different from one another. The science education reform has transformed this science department into warring camps—subcommunities with distinct and conflicting technical cultures; teacher factions competing for a sense of professional authority and future well-being.

The San Lucio math faculty, located in an urban school with a diverse and changing student population, displayed a dramatically different dynamic for reform. This department illustrated how subject reform can build department community and that experienced teachers can be active leaders in the change process. In San Lucio’s math department, faculty discourse about the new curriculum standards, teaching, and assessment guidelines was lively and intense. While teachers were not of one mind, disagreements and debate occurred in the context of shared commitments to improving math education for the school’s disadvantaged students. Lines were not drawn when teachers differed in their views or displayed very different levels of understanding about the reform.

San Lucio’s math department makes clear that strong professional community is not synonymous with a notion of strong department boundaries. This department functioned as an open system, incorporating math educators from other schools and nearby colleges into its subject community. It was common for such “outsiders” to participate in regular faculty meetings and to collaborate with teachers. Indeed, the strength of this math department community has been nurtured and enhanced by its interchange within the broader math reform community. The department obtained legitimacy, encouragement, and resources for teaching reforms through interchanges with the broader community of math educators. The department’s open boundaries probably were important in avoiding the divisive, zero-sum experience of subject education reform observed in other settings.

**CONTOURS AND CULTURES OF TEACHER COMMUNITY**

Teachers’ professional lives and relations evolve within multiple, embedded teaching contexts. The boundaries of teacher community are shaped by broad institutional patterns and by the organizational settings of teachers’ daily work lives. Recent research demonstrates that subject departments are primary workplaces for high school teachers. The intersection of subject cultures and high school depart-
moment organization is a powerful frame for teachers' professional identities and communities.

This chapter provided further evidence for this claim, but mainly it focused on boundaries and bases for teacher community beyond and within the subject department. On one hand, we observed broader organizational contexts for teacher community; district, school, and subject contexts had roles to play in specific aspects of teacher community and professionalism. On the other hand, our data made clear that departments are core teaching contexts that vary enormously in their professional cultures. I argued that the strength and character of department community heavily mediate effects of institutional conditions and changes on teachers' work lives and condition their power to weaken or divide the department community.

A key issue pursued in this chapter and in ongoing CRC research is: What threatens strong professional community within subject departments? I highlighted broad, institutional conditions in U.S. education that threaten to undermine department communities. Specifically, we have seen how education goal diversity supports student and teacher tracking, how local inequalities in teachers' subject preparation often stratify teachers in a department, and how subject education reforms can divide department faculties in disputes over teaching standards.

Research using national survey data and CRC field data showed that teacher tracking is a common strategy for managing diverse educational goals and student populations and that it generally undermines teacher community. Local inequalities in teacher labor force conditions also have been documented by multiple U.S. data sources; these inequalities are strongly related to students' socioeconomic statuses, are likely to affect teaching quality, on average, and appear generally to undermine teacher community. Effects of subject reforms on teacher community are less well-documented, and case-study findings reported here do not aim for generalizations; but our research suggests that the reforms strongly interact with established department cultures in their effects on collegial relations and teaching practice.

My analyses of these "threats" to department community highlighted the interplay of institutional and organizational conditions with social system conditions in the departments. I called attention to the active role teacher communities play in resolving the institutional tensions and problems they confront.

The cases discussed in this chapter illustrate variable conse-
quences of diverse and changing contexts of U.S. high school teaching for department community. In interaction with the traditional culture of Rancho’s math department, goal diversity and assignment of unqualified teachers to math classes increasingly stratified the faculty. Science education reforms divided Jefferson’s science department and created strong, competing subcommunities.

In contrast, Esperanza’s and San Lucio’s math departments thrived under conditions of change and professional challenge. In these department cultures, teacher collaboration was common and ongoing; professional development was assumed. Their strength as teacher learning communities derived not from special structure or formal arrangements, but from socially constructed norms for teachers’ professional lives. Interestingly, both of these powerful departments had open, fluid boundaries; it even appears that boundary-spanning relations with subject communities outside the school played an important role in forging these strong learning communities for teachers.

Our research on teachers’ professional community in U.S. high schools presents a much more complex, varied, and fluid picture of the boundaries of professional community than often portrayed in educational research, particularly in the “school-effects” literature. From a “bottom-up” perspective, we saw how broad institutional patterns and specific conditions of high school teaching jobs together shape teachers’ work lives and communities. Individually and collectively, within and beyond subject departments, high school teachers construct boundaries of collegial networks and norms for their work. We are just beginning to understand the contours, diversity, and evolution of teachers’ professional communities.

NOTES

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1. Technical details are provided in the papers cited or, for unpublished research, upon request.

2. When CRC California independent schools and the Michigan alternative school were included in our analyses of collegiality and professionalism variables, we saw much stronger between-school variance. However, this variance was not significantly greater than that explained when only the sector variable was used in the models (Talbert & McLaughlin, 1994). Except in the analyses of collegiality, observed variance between the comprehensive public high schools could be accounted for by district differences.

3. Interestingly, Lortie (1975) ignored the institutional context of teachers’ broad-ranging objectives, explaining them in terms of the task’s uncertainty and teachers’ personal interests in going beyond the formal (academic) curriculum (pp. 109–121). His data derived largely from elementary teachers, who may be less likely than secondary school teachers to feel that they are juggling multiple and competing goals for American education. Also, advances in organizational theory and legal trends in education since Lortie’s study have made more salient the goal context of U.S. public schooling.

4. For example, in Onyx Ridge, 20% of the faculty ranked “academic excellence” as their top priority, while 20% ranked this educational goal as one of their two lowest priorities out of the eight goals ranked. Such wide dissensus on this particular goal generally may indicate the existence of teacher specialization by student achievement level, as it did in this case.

5. While results are preliminary due to small subject-specific samples, data for math and science departments in 10 CRC comprehensive high schools showed a strong relation of faculty preparation to teacher collegiality among the science departments but not among the math departments.

6. Siskin (1994) described how a minimally prepared Rancho mathematics teacher learned to teach successively more advanced math classes by being “apprentice” to a qualified subject colleague. However, this kind of commitment to, and collaboration on, teacher learning was an exception to the department norm.

7. For discussion of teaching policies and practices in Esperanza’s math department, see Grossman & Stodolsky, 1993; Gutierrez, 1993; Ma, 1994.

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