# **Problematizing School Subject Content**

TOMAS ENGLUND

IN A WELL-DEFINED and structured discipline such as the natural sciences, there is a strong temptation to take the subject matter as a starting point for curriculum development. Whenever that happens, it becomes difficult to "problematize" the school subject content; it is much more likely that it will be taken for granted. In such cases, the meaning that students are offered by their school subjects— what I will call the *educational* content of school subjects—is always at risk of being dominated by a narrow view of the socialization function of education.

This situation unquestionably is linked to the fact that the moral and philosophical aspects of education and socialization have been neglected. To explain the neglect, much has been written about the dominance of scientific-technical rationality in educational thinking during the twentieth century and the consequent adjustment of educational research and teaching to the demands of this rationality (cf. Englund, **1986).** One of the casualties of educational research so construed is that the content of education usually is not problematized very well.<sup>1</sup>

Problematizing school subject content is a moral and philosophical endeavor that cannot be addressed by scientific-technical rationality. The central questions of philosophical inquiry in education are about the worih of knowledge and meaning offered to students. Scientific-technical questions about efficiency and effectiveness are quite different questions—indeed they are derived from the central questions of education — yet efficiency and effectiveness questions tend to be more prevalent than philosophical inquiry, on the educational research agendas of many countries.

Sweden has been no exception, yet there has been a substantial renaissance in recent years of educational research with a philosophical purpose. Because it occurred in a relatively well-defined time period, this rekindled interest in a moral

Problems of Meaning in Science Curriculum. Copyright © 1998 by Teachers College, Columbia University. All rights reserved. ISBN 0-8077-3708-9 (pbk), ISBN 0-8077-3709-7 (cloth). Prior to photocopying items for classroomuse, please contact the Copyright Clearance Center, Customer Service, 222 RosewoodDr., Danvers, MA 01923, USA, tel. (508) 750-8400. and philosophical role for educational research can be examined as a case study with rich potential for addressing some perennial problems of interest to educational researchers elsewhere. It began with a resurgence of interest in "didactic" research—that is, a renewed focus on the importance of subject matter—and it has taken two directions that are described later in this chapter. The key factor distinguishing the two has been the extent to which the subject matter has been problematized, and it is toward understanding this factor and its implications that the chapter is devoted.

Some readers may find the termdiductic to be old-fashioned, or predominantly European. Both perceptions are essentially correct. (See Hopmann & Riquarts, 1995, however.) The term, as an adjective, basicaliy means "instructive," but most significantly it tends to be associated in practice — in teacher education, for example with traditional school subject areas such as science, social studies, and mathematics. "Science didactics" probably would be expressed approximately as "science education" in North America, Britain, or Australia, and the science education research tradition in those places certainly shares the important feature of having developed in the two directions being explored here with respect to didactic research in Sweden.

The argument in this chapter proceeds in three sections. The first outlines the development of didactic research in Sweden, with particular attention to the two directions it has taken. In the second, I need to provide the reader with some history of Swedish educational research, because the renewed interest in subject matter occurred in a historical and intellectual context. Especially important is the profound influence of changes in the sociology of education on the preoccupations of educational research in Sweden and elsewhere. In the final and longest section, I examine the educational implications and the potential of different approaches to didactic research generally, with special reference to aspects of science education. Both implications and potential are shown to rely heavily on the extent to which school subject content is problematized.

## "NARROW" AND "BROAD" DIDACTICS

Didactics has developed within Swedish educational research in two quite separate directions since the early 1980s—one historically related to cognitive psychology, the other to curriculum theory. As a reflection of and evidence of how the content question was emphasized, it may be noted that in 1981 research groups working within these different directions called their respective research "content-related educational research." The term *didactics*, even if it was known, was not used at that time. In a report **2** years later, Marton (1983) relaunched the term diductics, saying that it should deal with "scientific studies of questions connected to what content the teacher chooses to teach and how he or she teaches the specific content" (p. 64). In spite of this rather broad definition, the territory of didactics was in the same report narrowed down to questions of how pupils conceptualize and treat the content of their education.

Countering that narrow construction, curriculum theorists argued that the factors determining educational content and the question of *why* a certain content was chosen were also central concerns of didactics (Englund, 1984). The subsequent evolution of Swedish didactics, at least within educational research, was in two clearly distinguished but simultaneously desirable directions, which I called *broad* didactics—based in curriculum theory—and *narrow* didactics—oriented toward instructional methodology and related to phenomenography (Englund, 1990;Marton, 1980, 1986—especially the contributionsby Marton and by Englund & Svingby, in the latter).

During the years since the establishment of these two directions in didactic research, it is the narrower, instructional variety that has become the better known, even if both directions have had quite a major impact. The prominence of instructional didactics springs from two factors in particular: its perceived closeness to the concrete instructional problems of different school subjects and, in the Swedish context at least, its gradually evolving link with phenomenographic methodology, which stresses the differences in student learning by showing how a given content is conceptualized differently by students.

The *narrow* model for didactic analysis entails a focus on the relationship between (1) a version of the subject content that is, usually, an epistemic imitation of the underlying discipline, and (2) the students' learning of that version of content. To put it in the terms being used in this volume, narrow didactic analysis in science education is concerned primarily with getting students to learn "scientific meanings." It is historically based in cognitive psychology and its close relationship to the phenomenographic approach has been noted. It is quite obvious that in many ways this model has been and still is very successful when it comes to analyzing qualitative differences in learning. Nevertheless, it will be critically examined below with respect to some of the societal consequences to which it often leads and that it fails to problematize. This aspect also can be compared with other internationally well-known narrow didactic models such as alternativeconceptions, prior conceptions, untutored beliefs, and misconceptions. However, I also will note promising attempts within narrow didactics to widen the view of didactic analysis by contextualizing learning situations.

The *broad* approach to didactic analysis, which I would like to underline in this chapter, is closely connected to curriculum theory as it developed in Sweden in the past few decades. The latter will be characterized below as consisting of three different modes, or stages when perceived in chronologicai terms. What is important to stress is that these three different modes are based on or linked to different sociologies of education, leading to very different educational implications. Whereas the narrow approach is highly specific about a rather narrow view

of educational content, the first stage of the broad approach is indifferent to content, and the second views it as a medium of social control (discussed in the following section). However, in the third stage content is problematized in a manner highly suggestive of the attention to "companion meanings" in the present volume.

I return to narrow and broad didactics later in the chapter. From a historical perspective on the development of curriculum research in Sweden, I will exemplify the benefits when curriculum research takes into account the content of education, that is, when curriculum meets didactics. (The "curriculum meets didactics movement" is a most interesting development in educational research. See Westbury's [1995] examination of this phenomenon.)

#### THE HISTORICAL BACKGROUND FOR BROAD DIDACTICS

Curriculum research in Sweden started with Dahllöf (1989) and the development of "frame factor theory." This theory can be said to form the first of three stages that give Swedish curriculum research its identity. I will try to show how these three stages have been anchored in different sociologies of education with different world views and perceptions of science.<sup>2</sup>

#### Stage 1: Frame Factor Theory and Traditional Sociology of Education

The phenomenon on which the frame factor theory focused was the learning process and how it seemed to be affected over time by various structural aspects of the school system. **A** more natural subject for educational research would be hard to find. Dahllöf (1989) points out that the specificity of the theory

#### lay in the fact that it empirically analysed the content and the results of teaching over a longer period for a whole [3-year] stage of the school system. (p. 6)

By analyzing the learning process in such terms, frame factor theory acquired an explanatory value in relation to the space for action permitted by the "frames"—for example, the time available and the rules about size of school classes and grouping of pupils. In its preliminary form, the theory also sought to explain how state decisions about the direction and dimensions of schooling constrained and regulated the actual shaping of education. An example of curriculum-historical analysis in the spirit of this perspective is in Dahllöf (1981), in which shifts in the time available for different school subjects are demonstrated.

The conceptual climate and dominant view of science within which the frame factor theory took shape comprised the efficiency and equality aims of the traditional sociology of education. The view of content held within this tradition cannot be characterized as critical or relativized. It regarded education and its content as good in themselves. School knowledge was viewed as shaped by consensus and in accordance with the cumulative development of underlying disciplines.<sup>3</sup> The concern was in principle a *problem of* **efficiency** (a question of efficient organization of pupils and of sequencing the given content)—later taking its shape within educational technology. The representatives of traditional sociology of education (and of frame factor theory) also believed that it was possible to draw a clear dividing line between the tasks of scientists and of politicians —forexample, by allowing the politicians to decide about the question of ability grouping on the basis of empirical investigations.<sup>4</sup>

## Stage 2: Curriculum Theory and the New Sociology of Education

The second stage of the frame factor theory entailed, on the one hand, a deepening of the earlier studies of learning processes and, on the other, a development of the theory into a curriculum theory. Here we can observe a preliminary endeavor to study the historical and societal determination of the curriculum and to supplement the earlier analysis of outer structural frames (timetabling, etc.) with an examination of the structure of teaching and classroom behavior.

New programmatic questions were asked. One such question was how the educational content of a curriculum was built up and legitimated. This question necessitated historical analyses both of how different conceptualizations of the goals and content of schooling were shaped, and of how they were maintained. Researchers began to analyze how the teaching and learning processes differentiated among pupils and how the educational content re-created certain social conditions. The functions of schooling and differences in pupil achievement were formulated in terms of *reproduction* and two other key metaphors, namely, *social control* and *legitimacy*. The teaching process and its content were seen as tools, but what this research perspective overlooked was the differing educational aims of different social forces and their implications. Instead, this perspective emphasized how content selection was legitimated, without making the content itself problematic and contingent—that is, open for different choices.<sup>5</sup>

In summary, the Swedish variant of the new sociology of education and its critical curriculum theory did not really approach teaching from a perspective that implied an interest in differences and change. Rather, the emphasis was on the grounds on which the complicated process of content selection was legitimated, and on the stability of the educational system and its inability to undergo real change regarding its content, owing to its reproductive function. Researchers working within this tradition also rejected in principle the idea of making or attempting to develop a basis for curriculum recommendations, focusing their efforts instead on exposing structures.

Meanwhile, in England the new sociology of education was for a long time rather ahistorical (cf. Whitty, 1985). However, it is interesting to see how, in its criticism of the dominating educational philosophy (e.g., Hirst, 1974) that legitimated school subjects as simplifications of the underlying disciplines, it did develop a critical sociological perspective on curriculum history. This criticism, in which Goodson (1987,1988) is prominent, takes as its starting point, and demonstrates, the fact that school subjects are historical and social constructions and that they change over time. An important result of Goodson's research in curriculum history is his model for the development of school subjects — "invention, promotion, legislation and mythologization" (1988, pp. 193–194). He asserts that the representatives of a school subject, when it is established, develop a rhetoric of *legitimation* that prevents further change. The main interest of this kind of curriculum-historical research is consequently not to examine different moral and political implications of teaching, that is, the production of companion meanings (cf. Englund, 1991b). Instead, it focuses on the processes and especially the social forces shaping the content in a certain way—in England, the ambition of a school subject to be accepted by the universities.

However, it is quite clear that research into curriculum history that proceeds from the school subject is *one* important starting point for a problematization of educational content and hence for didactic research. The risk inherent in taking the school subject as a starting point is that this easily may result in a confirmation of the content already established and that the analytical perspective may not go beyond the school subject. This point is taken up further in a later section of the chapter.

# Stage 3: A "Citizenship" Sociology of Education and Curriculum

Moral and philosophical interest in content was put on the agenda of curriculum theory in Sweden in what I call its third stage. An effect of this new interest was that educational content was problematized through recognition of (1) questions about its selection, (2) manifest differences seen as possible differences in interpretation at all levels in the educational system, and (3) historical change in the "shape" of school subjects. Thus, the third stage did not simply entail an application of the earlier stages of curriculum theory. The result of incorporating the focus on content into curriculum research meant a fundamental change concerning the interest in knowledge and a gradual shift in theoretical perspective.

Didactic research within the third stage emphasizes the question of the choice of educational content and the contextualization of teaching, that is, the content chosen in terms of what meaning and what context is offered to students. The fundamental assumption **is** that these choices, conscious or unconscious, have crucial implications for teaching and learning. Depending on what content is chosen, what context it is given by the textbook and the teacher, the student will be offered different possibilities regarding creating and constructing meanings. In this view, the content of learning can never be confined to unproblematic "facts" or subject content as such, but must be seen as contextualized in a more or less determinate context and thereby given *different social meanings* or *companion meanings*.

Readers may find that this brief overview of three stages in the development of Swedish curriculum research has important parallels with educational research in other countries, as suggested by the developing international attention to the movement alluded to earlier as "curriculum meets didactics." Whether or not the Swedish case study is representative, for purposes of the present chapter it is important that the three stages be identified, in order to prepare for the analysis that follows. That is, unless one recognizes the significance of having an educational research agenda move on to what I have called Stage **3**, it is difficult to apprehend the point of the following arguments about the educational implications and the potential of different approaches to didactic research.

# THE POTENTIAL OF DIDACTIC RESEARCH

In the following I will examine in greater depth the significance of problematizing school subject content in terms of meaning making, by returning to the potential of the narrow and broad didactic research traditions. As analytical tools to assist in this examination, I first distinguish among ways of conceptualizing educational content.

# **Three Conceptualizations of Educational Content**

By way of introduction, it can be said that school subject content can be approached and conceptualized in ways that vary greatly. At one extreme, it is seen as unproblematized and given in accordance with educational policy aims. There are different essentialistic interpretations, and content can be seen as well in historically and socially changeable and interpretable terms, as noted below. The phrase "educational content" is used to signify that the focus here is on the meaning and educational worth of what is being offered to students.

**Epistemic (SchoolSubject) Content** This version is determined essentialistically and scientistically. In the case of science education, its basis is a school subject's relationship to an underlying scientific discipline, for example, central concepts such as gravity, power, chemical bonds, photosynthesis, electricity, and so on.

**Knowledge Content.** This version is derived by analysis of relations—such as the relationship between individual and society, individual and nature, and *so* forth—which are dealt with, explicitly or implicitly, as educational content. The aim of such analyses is to trace different conceptualizations of the relation stud-

ied, which can be shown to have different didactic implications—for example, different "curriculum emphases," "subject foci," and "nature languages," which are elaborated in this volume. (See also Englund, 1986, for an example of didactic typologies of the social studies subjects.)

**Socialization Content**. This version of educational content is developed out of knowledge content analyses. Socialization content includes the different meaningcreation contexts or discourses where different conceptualizations of the relation studied (knowledge content) are expressed. In terms of this volume the result from this type of analysis is companion meanings that constitute and characterize an educational discourse, which could be, for example, patriarchal, scientific-rational, or democratic (Englund, 1986, 1996c).

With these differing versions of content in mind, one can proceed to examining the educational implications and potential of different approaches to didactic research. The important point is that the view of content will influence the kinds of questions seen to be significant within the different approaches.

# A Sociocultural Perspective on Learning: The Potential of Instructional Didactics

Already in Marton (1983) and in the "particular"—that is, subject-specific didactic research (instructional didactics) that has taken shape, the content—student relationship is emphasized. What is problematized is the students' differing conceptualizations and understanding of the educational content. Generally, that content itself has been looked upon as given in an instrumental sense, in a way that does not go beyond a view of school knowledge as limited to one object or rather one central concept at a time, as noted above.

The leaming of these concepts (in relation to differentlearners) consequently has been problematized, but not the educational content that is to be learned, other than in relation to the problematization of learning. The focus on students' conceptualization and understanding of central concepts derived from academic disciplines — what I earlier have called epistemic school subject content — implies that a learning content that for most students is fragmented, coupled with what in a very narrow sense may be seen as the "right" way of understanding it, has been taken as the point of departure.<sup>6</sup>

Educational content often has been "chosen" on strictly essentialistic scientistic grounds. The phenomenographic methodology, although it is scientifically legitimate, has not been problematized for use within didactics. This has meant that the problematic of learning has excluded many questions; the choice of learning content has not been questioned.

The kind of questions that have been excluded are, for example, what sort of socializing effects (companion meanings) arise from the learning of (or attempts to learn) these fragmented concepts, that is, what meaning-creation contexts, if any, the concepts are set in. An epistemic school subject content can be given totally different (companion social) meanings depending on its contextualization. Here we can see a need to open the door onto an area of research that has been neglected, an area of research that considers the "meta-lessons" that the educational content implies. These express the reasons or purposes for students to learn it—curricular contexts in which they are to understand the subject (Östman, 1995; Roberts, 1988).<sup>7</sup>

Another question that could be addressed in relation to this, is whether school subjects in their traditional form—for example, science subjects such as physics and chemistry, with their pronounced scientific structure—are the most adequate tools for preparing children for citizenship, and whether mere adjustments within these school subjects (development of their central concepts, or more sophisticated methods of teaching them) are sufficient, or even desirable (cf. Englund & Östman, 1992).

There are certainly potential dangers with a one-sided accentuation of leaming at the expense of deliberations about content selection. The societal consequences of the kind of didactic research that has been referred to here as "narrow" could be that a science- and mathematics-oriented view of knowledge will predominate and also will characterize other fields of knowledge. This implies that there will be a focus on epistemically delimited areas of knowledge, irrespective of different views in the scientific community and in society at large concerning their adequate contextualization.

This potential danger can be countered by revitalizing the philosophical dimension of education, in order to evaluate and relativize different knowledge contents in relation to their historical and societal contexts, and not just as expressions of different students' conceptualizations. As I see it, for a relativization of educational content to be scientifically interesting —for example, an analysis of different student conceptualizations of educational content —links have to be developed that provide a perspective on this specific educational content: its historical origins, its formation, different ways of perceiving it, and the different possible angles from which the subject matter or, better, the knowledge content can be delimited. In short, there needs to be a shift from a purely instructional didactic discourse to one that incorporates a supplementary historical-societal dimension.

Among representative examples of research that widens the phenomenographic approach to didactics and that problematizes the epistemic content as the school subject content, I would like to mention the work of Säljö and the research group he is leading. Säljö (1992b) has developed what he calls a sociocultural perspective on the leaming process (see Chapter 4 in this volume). In contrast with research

in which the learning problem is, as a rule, perceived in terms of the learners' commonsense views versus the adequate, scientific way of conceptualizing, Säljö sees the problem as being that scientific concepts — the epistemic content — are seldom confirmed in social environments other than those of the scientific communities (Säljö, 1995; see also Aikenhead, Chapter 7 in this volume). Because of their specific scientific character, these concepts often are seen by pupils as strange and difficult to understand. Simultaneously, due to our conceptualization of learning as learning scientific concepts — the metaphors of institutionalized schooling (Säljö, 1990) — we often see learning problems as psychological and not as communicative. In a sociocultural perspective there is an awareness that we are not living in an unambiguous "reality," but rather that there are always different perspectives ("meaning provinces") for looking at and understanding phenomena.

#### A Sociopolitical Perspective on Teaching: The Potential of Broad Didactics

In Stage **3** of the development of curriculum research in Sweden, the stage that gave rise to broad didactics, there is a sociopolitical perspective that sees education and its content as the objects of struggling social forces. The ultimate power center for this struggle is the state, but it is also a struggle at all levels over whose interpretatation is to win out. The way in which the educational system manifests how reality is to be conceptualized and school knowledge constructed means that certain power relations are consolidated or transformed. This transmission of ideology is therefore subject to constant shifts, as power relations gradually change. At all levels there are permanent ideological conflicts, while at the same time a cohesive state power and state apparatus have the task of shaping political compromises out of the various political and ideological interests and making it look "rational" (e.g., through national evaluation **programs**).<sup>8</sup>

Educational policy documents such as national curricula and syllabi consequently are analyzed within a Stage **3** perspective as interpretable political compromises. The scope for interpretation expressed by these documents shifts over time in accordance with the forces mentioned above. Depending on the forces, different preconditions are created for the concrete selection of educational content, which can be studied more closely by means of various types of theoretically based empirical studies.

Instead of taking their starting point in the way a certain selection of content is legitimated (the perspective inherent in Stage 2), analyses of educational content in Stage 3 are set in another theoretical perspective. This means that the choice of educational content analyzed is limited to knowledge content, as defined earlier. These areas of content can be conceptualized in different ways, with different didactic implications. Different interpretations of the knowledge content can be seen as arranged according to a system of different meaning-creation socialization contexts and dimensions of citizenship.<sup>9</sup>

What it is crucial to stress is that this research direction has didactic implications, in the sense that *different* ways of conceptualizing knowledge content are exposed. Developing a systematic knowledge of these different ways and assimilating this knowledge (the common task of researchers, teacher educators, and teachers) are, as I see it, central elements in the step-by-step development of what could be termed didactic competence.<sup>10</sup>

Compared with the earlier stages of curriculum research, it can be said that the normative implication (from Stage 1) is partly revived here, but now as a possible choice for *teachers*, rather than politicians, and is dependent on a didactic competence within the area of the relevant knowledge content. This didactic competence implies an educational-philosophical standpoint and a readiness to discuss the aims of education and to have arguments for a given selection of educational content. The central implication of the broad didactics of Stage **3**, however, is the possible reestablishment of the philosophical aspect.

## CONCLUDINC REMARKS: REESTABLISHINC THE PHILOSOPHICAL ASPECT OF EDUCATIONAL AND DIDACTIC REASEARCH

A central challenge for future educational and didactic research can be related to the further development of a critical analysis of the dominant educational philosophy's view concerning the epistemic basis of school subjects. The critical analysis that has been made within the new sociology of education (for an overview, see Steedman, 1988) can, in the third stage, be further developed in line with the Aristotelian starting point "that education is fundamentally not an epistemological but an *ethical und political enterprise*" (Schilling, 1986, p. 12; cf. Aristotle, 1990).

This perspective means that the content of education cannot be referenced to any definitive scientific-technical rationality. The content aims that are expressed and the tradition within which, say, science education is embedded (including its relationship to various scientific disciplines) have to be understood as historically and socially conditioned and always open to discussion.

With Aristotle and his modern interpreters, I would put forward a communicative-practical rationality, stressing space and procedures for a rational discourse of value questions, as an alternative to the presumed adequacy of scientifictechnical rationality. Once different conceptualizations of educational content have been acknowledged, a means is needed for discussing and debating their relative merits. This enterprise also can (given the aims set for the educational system today) be related to the question of values (companion meanings) to be communicated. Thus the educational philosophy that has focused on the relationship between democracy and education is placed center stage.

In line with such a view are the endeavors to revitalize the pragmatic tradition, especially as represented by Dewey (1916/1966), into a neopragmatism. Richard Rorty (1982) and Richard Bemstein (1986) are the leading figures at a general level, and Cleo Cherryholmes (1988) is one prominent example within educational research. There is a need to go beyond the analytical scientistic tradition of philosophy that has dominated this century and that, within educational philosophy, has legitimated an unproblematic relationship between underlying disciplinesand school subjects—in science education as elsewhere. To do so means to revive the role of a social reconstructionist educational philosophy in analyzing communication and a sense of community (Englund, 1986, 1996c).

The task before us is one of developing an attitude to educational content that accords with the demands of the "knowledge society" and the pluralist society. In this situation, teachers have to create the preconditions for a public dialogue and try to develop reasonable citizens discharging their civic purpose, the formation of new publics (Giarelli, 1983). Translated into concrete teaching, this means that

becoming a part of the public does not involve learning what the proper response is to an item stimulus.... It is finding a way to enter the conversation about the significance of a flow of historical events and about the meanings that are to be attached to them. (Feinberg, 1989, p. 136)

Teachers (or future teachers) and teacher educators tum out to have a key role to play as carriers of different didactic and educational-philosophical conceptions and different approaches to educational content. I believe that we need to focus more systematically on these differences among teachers/teacher educators (cf. the earlier discussion of ways of broadening the phenomenographic approach). Perhaps such a focus also would forcibly bring about a productive confrontation between **the** two didactic research directions mentioned.

That confrontation also would create a more genuine basis for analyzing educational-philosophical dimensions that go beyond the questions of learning and selection of content as isolated phenomena. Teaching and learning processes always imply interpretations of knowledge content, and in that Connection they are links in the meaning-creation contexts of socialization processes.