

## Education à la Silhouette: The need for semiotically-informed curriculum consciousness

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### *Abstract*

*The word 'silhouette,' we are told, 'was satirically derived from the name of the parsimonious mid-18th-century French finance minister Étienne de Silhouette, whose hobby was the cutting of paper shadow portraits (the phrase à la Silhouette grew to mean 'on the cheap')' (Encyclopædia Britannica 2006). Education à la Silhouette results from education practice and discourse that is not informed by semiotic understanding. Language and other resources that could be used as signs mediating access to the world for learning and participation become, instead, flat and opaque substitutes for knowledge, and occlusive obstacles to learning and understanding. Propositional and procedural 'knowledge' are presented and learned (whether by memorization, or by active construction) with the idea that such propositions and procedures are, in themselves, bits of positive knowledge, rather than being used as sign-elements for cognitive participation in the world through mediative semiosis. The fundamental difference between positive and semiosically mediative conceptions of meaning implicates profound consequences for education practice and policy.*

### 1. Introduction: Does Chewing Gum Make Us Smarter?

To clarify the nature of the fundamental difference between *positive* and semiosically *mediative* conceptions of meaning, we begin with an example that may seem trivial, but is useful as a clear instance of an implicitly positivist lived ideology, an instance in which test scores—which might, arguably, serve as a *mediative sign* of 'smartness'—are discussed, instead, as if they *positively* represent 'smartness' in itself.

KATIE COURIC, co-host: ... a couple of studies [indicate that chewing gum] may actually make you more intelligent. ....

JAMIE GANGEL reporting: .... according to this expert, they are...

Dr. KENNETH ALLEN (New York University School of Dentistry): Very smart people.

GANGEL: That's right. Two recent studies show chewing gum may make you smarter.

Dr. ALLEN: We found that the students who chewed gum did better on a written exam than the students who did not chew gum.

GANGEL: About how much better?

Dr. ALLEN: The difference between a C+ and a B, which is a significant difference.

GANGEL: Larger studies still need to be done, but more schools are allowing students to chew gum, especially during tests. ....

Even if it does make you smarter, many argue it will never look smart. But the gum makers are prepared to try. (NBC News 2005)

What's interesting for us in this *Today Show* segment is how unproblematically being 'smarter' is equated with getting higher scores on tests. If we think of test scores as *indicators*, or as *signs* of someone's knowledge, understanding, or ability, we cannot jump to the conclusion that the gum-chewers are smarter, without first ruling out the possibility that chewing gum could have a direct effect on test performance, even without having an effect on the *smartness* of those who chew gum while taking the test. That question is not being asked, however, in this discourse. This is a discourse that does not feature test results as (potentially useful, but also possibly questionable) *signs* of learning or intellectual ability, but simply and directly as *smartness itself*, in its objectively documented form.

## 2. Positivism

Could this segment on smartness and chewing gum be just a case of overly glib journalism—or infotainment—that does not really exemplify serious discourse in and about education? Unfortunately, the problem here, far from being the exception, is a pervasive problem in the most serious discourses about education. Diverse examples are offered in this paper as exhibits of education discourse based on an implicit positivism, which is explained as a lived ideology dependant on blind faith in the fundamental positivity of meaning, to the neglect—if not denial—of the central and pervasive mediating role of sign activity, or semiosis.

### 2.1. *Exhibit A: Social studies standards and 'the due process of law'*

Students will understand that the principle of 'due process' means that the government must follow its own rules when taking actions against a citizen.  
(Delaware Department of Public Instruction 1995: 35)

One problem with this 'social studies content standard' for grades 4-5 is that it's just wrong about what 'due process' really means. It isn't wrong completely, simply, or absolutely: Due process does 'mean' that, in the sense that *one of the requirements* of due process is for government to follow its own rules—such that a government's failure to follow its own rules can *ipso facto* constitute a denial of due process.

But government following its own rules is not really *the meaning* of the idea, concept, or principle of 'due process.' If that were all it meant, then due process would be afforded just so long as government has followed its own rules. But many governments have behaved in ways that violate due process even when they are following the rules that they have written for themselves to follow. This issue was addressed by the U.S. Supreme Court in 1856:

It is manifest that it was not left to the legislative power to enact any process which might be devised. The article [the Fifth Amendment to the U.S. Constitution] is a restraint on the legislative as well as on the executive and judicial powers of the government, and cannot be so construed as to leave congress free to make any process 'due process of law,' by its mere will.  
(*Murray's Lessee v. Hoboken Land and Improvement Co.* 59 U.S. 272, 276)

Hence, the meaning of 'due process' in the U.S. Bill of Rights is something different from just government following its own rules. Yet, Delaware's fifth-graders can demonstrate that they have satisfied the state's social studies standard if their answers on the high-stakes test show that they've learned a false idea about what 'due process' really means.

What we need to understand here is that this is not just a trivial example of a badly written standard—a problem that can be fixed simply by substituting a correct definition in place of the

faulty one. This is just one example of a profound and pervasive problem in education, a problem that unavoidably results from adherence to the positivist ideology that blinds us to the essential role of semiosis.

To see the intractability of the problem within the positivist discursive universe, we may begin by considering the rival approach adopted by Virginia in its 'Standards of Learning' [SOL]. The contrast between general approaches followed by Virginia and Delaware is dramatized in a report by the Fordham Foundation, the education advocacy group headed by Chester Finn. In this report, Delaware's standards for history were labeled 'useless' and given the failing grade of 'F,' with the explanation that the history standards are

vague and unmeasurable as is evident in this example: 'Students will develop an understanding of modern United States history, its connections to both Delaware and world history, including Civil War and Reconstruction (1850-1877).' That sort of comprehensive knowledge and understanding of events spanning U.S., Delaware, and world history is beyond the capacity of even the best students and the standard, accordingly, is unhelpful for purposes of instruction and assessment. (Saxe 1998: 27)

The same report rated Virginia's 1995 *History and Social Science Standards for Learning* as 'A' or 'exemplary, and commented that 'Virginia has developed outstanding history standards. They are clearly written and provide solid content. Standards-setters from other states should carefully review them' (p. 39).

In Delaware, there are just sixteen general social studies standards that apply to all grade levels from kindergarten to twelfth grade. The fifth-grade due process benchmark comes under Civics Standard Two [Politics]: 'Students will understand the principles and ideals underlying the American political system.' Delaware's standards were faulted for the vagueness of its general standards. Virginia's alternative approach, favored by the Fordham Foundation, specified a vastly longer list of much more specific standards. For grade seven, due process was addressed in HSS.7.1 (Virginia Board of Education 1995):

The student will compare the Charters of the Virginia Company of London, the Virginia Declaration of Rights, the Virginia Statute of Religious Freedom, the Declaration of Independence, the Articles of Confederation, and the Constitutions of the United States and Virginia, as amended, with emphasis on their treatment of

- fundamental political principles including constitutionalism and limited government, rule of law, democracy and republicanism, sovereignty, consent of the governed, separation of powers, checks and balances, and federalism; and
- fundamental liberties, rights, and values including religion, speech, press, assembly and petition, **due process**, equality under the law, individual worth and dignity, majority rule and minority rights, etc. [emphasis added]

For grade twelve, HSS.12.4 stipulated that

The student will summarize landmark Supreme Court interpretations of the United States Constitution and its amendments, with emphasis on

- basic freedoms, due process, equal protection of the law, and government powers
- and will analyze the historical trends and contemporary patterns of United States Supreme Court decisions.

While these standards appear to name activities through which students might either gain or demonstrate some understanding of due process, etc., it was in fact student *activities* that were described, rather than the knowledge, ability, or understanding that should constitute the *standard*, or the measure by which we would want to judge the effectiveness of such activities in achieving

their intended learning *outcomes* (cf. Wiggins and McTighe 2005). Since students can find ways to ‘compare’ and ‘summarize’ without understanding, we need standards that can help us assess the learning achieved by our students against the target of achievement we are aiming for; and a description of activities does not provide us with a standard that can help us in that way.

Since then, the Virginia standards have been revised (Virginia Board of Education 2001), with a nod toward the intended learning outcomes: They now call for students to ‘demonstrate knowledge’ of due process and other topics, by ‘describing the First Amendment freedoms of religion, speech, press, assembly, and petition, and the rights guaranteed by due process and equal protection of the laws’ [CE 3(b)], ‘explaining how due process protections seek to ensure justice’ [CE 8(d)], and ‘analyzing due process of law expressed in the 5th and 14th Amendments’ [GOVT 11(B)]. The standards are still defined in terms of activities for students to perform, rather than what understanding of due process should be demonstrated in performing those activities.

But couldn’t these standards simply be rewritten to eliminate the problems we’ve seen here? The point I want to illustrate by use of the ‘due process’ example is that the problems we’ve identified arise from the more fundamental impossibility of doing justice to education within the confines of the currently pervasive positivist ideology. Let me explain:

Recall that the Delaware standards were condemned for ‘vagueness’ by proponents of Virginia’s approach. As we’ve seen, Virginia’s way of avoiding vagueness is to write standards that include lists of specific documents, and activities for students to perform using those documents. For all this detail and specificity, however, the Virginia standards don’t address the question of what students should know about due process, or what level or quality of understanding they should demonstrate. In fact, the problem with Delaware’s standard results from a different way of avoiding vagueness: By specifying exactly what fifth-graders will understand about due process (i.e., that ‘the principle of ‘due process’ means that the government must follow its own rules’), the Delaware standards are anything but vague in their explicit definition of what students are to understand; but the vagueness is eliminated here by replacing the actual idea of due process with a (false, or at best misleading) definition of ‘due process’ that is itself totally explicit, and hence amenable to a completely ‘definite’ (rather than vague) standard for student learning.

Delaware could try to revise the standard; but any reformulation of what ‘due process’ means, for understanding by fifth-graders, could be made more adequate to the actual idea of due process only at the expense of greater vagueness, and a less specific and measurable standard for student learning. There seems to be a necessary trade-off: We can have specific, measurable standards that fall short of our real purposes or, it seems, we can have more adequate standards that are less specific and measurable.

At this point, the chewing gum example can make us smarter: It can help us see how the apparently inexorable trade-off results from another instance of ideological discursive practice uninformed by semiotic principles. Just as test scores represented smartness in the gum example, here we see a verbal definition being regarded *as if this definite (and finite) verbal formulation is itself the standard* for what our students are to know, instead of the verbal formulations in the official standards documents being understood as *signs*, or as *expressions* of the real standards, such that the *real standards themselves* need not be confined to what is completely and explicitly contained within the finite text of the document itself, nor contained completely within the terms of any finite verbal formulation.

In this case it is exceptionally clear that what students are to understand is in itself a semiotic matter: The ‘due process’ clauses in the Fifth and Fourteenth Amendments are signs of the idea of due process which, in turn, is a sign of that aspect of justice which involves procedural provisions that are appropriate (or ‘due’) in relation to the interests at stake in an impending action or decision. One historically important written verbal formulation of this principle is in the text of the Magna Carta, agreed to by King John with his barons on the fields of Runnymede in 1215; but this was *just one sign or expression of the principle*—a principle that is not limited by

what is explicitly contained within that text itself. Courts in the United States have referred to the Magna Carta, and to intervening precedential cases, as they participate in developing our realization of the principle itself in their decisions about the new cases in front of them—decisions which, in turn, will participate in the ongoing development of the due process principle through its life as a sign undergoing limitless triadic interpretation in specific cases.

Instead of feeding students a poor substitute for due process, invented just for the purposes of teaching, testing, and holding schools accountable to the political authorities, we could be helping them attain an authentic understanding of the meaning of due process as a principle being realized historically as a value and ideal that guides our practical conduct in a limitless variety of specific cases. Ten-year-old fifth-graders can learn to understand due process by learning how to think about specific cases of law and policy affecting concrete individuals—including policies or cases at the level of their own classroom experience. Their understanding of due process can be assessed by observing whether they are asking appropriate questions, and thinking about relevant considerations, in responding to specific cases.

If the verbal formulations in the official standards document can be appreciated as *signs* or *expressions* of the real standards, without the idea that *the standard itself* must be something that can be seen completely and explicitly (re-)presented within the text of the document, then we can have real standards to aim for—standards that will promise authentic understanding, rather than poor substitutes whose only virtue lies in being completely and explicitly definable within the finite verbal formulations of specific texts and documents. Until then, the lack of semiotic understanding, and resulting recourse to a positivist ideology of (re-)presentation, leave us without the resources that would enable education practice that measures up to our aspirations for developing real understanding and ability.

The problem is by no means limited to fifth grade, to social studies education, or to systems of accountability based on high-stakes testing and standards. Generations of teachers in the United States, in all subjects and grade levels, have been taught that the ‘objectives’ stated in their lesson plans must be limited to explicit statements of observable behaviors, so there ends up being no plan for assessing any learning outcomes beyond the kinds of observable behaviors that can be explicitly (re-)presented in the finite texts of the ‘objectives’ statements themselves. There would be no such limitation if ‘objectives statements’ could be written as indicators, signs, or expressions of real objectives that are not totally explicit in those statements, but which can be further developed and refined through participation of other signs of the same learning outcomes, including rubrics used by students as well as teachers in the evaluations of the students’ progress. Instead of learning about the real subject matters, students get merely silhouettes.

## 2.2. *Positivism and positivity*

The ‘due process’ example is offered above as an exhibit illustrating problems typically resulting from what I am referring to as a disabling ‘lived ideology of positivism.’ This section explains what I mean by that.

First, I need to acknowledge and deal with the danger of not being taken seriously. The first time I proposed analysis of positivist assumptions presupposed in current standards-based accountability regimes, a colleague sympathetic with my criticism of the standards urged me to eliminate all references to ‘positivism’ because, he counseled, the charge of ‘positivism’ nowadays is nothing but empty name-calling. If you refer to anything as ‘positivistic’ you communicate your own critical or hostile attitude, but without any meaningful or substantive criticism of what it is that you’re referring to.

The deep irony of that advice will not be lost on anyone familiar with the classic forms of Positivism, and what they had to say about value claims—like ‘metaphysical’ beliefs not founded on positive sense data—as being neither true nor false about their object, but only revealing

something about the persons who express such claims. Peirce returned this volley to the Positivists themselves, when he observed that '[t]o call a branch of an inquiry "metaphysical" is merely a mode of obfuscation, which signifies nothing but the author's personal distaste for that part of his subject' (*CP* 8.60).

I want to pass over that irony, however, and acknowledge that my colleague was indeed making an important point about the current situation, in which effective critical analysis of positivist discursive practice may be precluded by the very commonality of 'positivism' as some sort of academic expletive.

In 1983, D.C. Phillips offered this example:

it seems as if the word 'positivism' arouses such negative feelings that it is often used in a blanket way to condemn any position at all that the writer in question disagrees with, irrespective of how positivistic that position really is. Henry Giroux uses the term this way, and according to his account positivists are guilty of a variety of heinous sins: they are not future oriented but they celebrate the present; they hold a passive model of man; they adopt theories to serve as foundations for 'technical control and coordination' (a point also stressed by Habermas); they are interested in prediction and explanation; and they hold that the 'principle of rationality in the natural sciences' is superior to the 'hermeneutic principles underlying the speculative social sciences' (Giroux, 1981, pp. 42-46). It is not surprising that Giroux sees positivists (*his* positivists) everywhere. (Phillips 1983: 8)

This appears again in a 'somewhat updated' republication of Phillips's article, where he laments what he sees as '[a] distressing tendency noted in 1983 [that] has grown even more pronounced, specifically, "positivist" has become a widely-used term of abuse ...,' and he quotes Sandra Harding as just one example of the social scientists, educational researchers, and postmodernist and feminist philosophers writing since 1983 'who build reputations on seeing positivists (or their ghosts) at every turn' (Phillips 2004: 67-68).

To be clear about my mission in this paper, I need to make it clear that I am not just climbing cluelessly onto some misdirected bandwagon. I cannot, as my colleague advised, drop all references to positivism so that my criticism of education standards (etc.) will be more readily received. An essential point of this paper is to show how the core idea of positivism is fundamental to discursive practices in education. No doubt we can make some improvements in the standards and other education practices; but I am arguing that the most serious fundamental problems remain intractable until the 'lived ideology of positivism' is first recognized, and then abandoned, in favor of discursive practice that is aware of the nature and the fundamental importance of semiosis. Hence, my argument is not one that can be made without the critique of positivism.

Part of the problem is that the lived ideology of positivism is so pervasive that it blinds those who breathe its atmosphere. Cf. Peirce (*CP* 6.604):

[Dr. Carus says] that I am 'very positivistic in my logic of science.' This is a singular misapprehension. Few of the great scientific minds with whom I have come into personal contact, and from whom I endeavoured to learn, were disposed to condemn originality or the ideal part of the mind's work in investigation; and those few, it was easy to see, really breathed an atmosphere of ideas which were so incessantly present that they were unconscious of them.

In other words, those 'great scientific minds' who were more disposed to talk like positivists, were actually sustained by an atmosphere of ideas that positivism cannot acknowledge. As for less great 'experiential' positivists, Peirce observed:

Mach belongs to that school of *soi disant* experiential philosophers whose aim it is to emancipate themselves from all metaphysics and go straight to the facts. This attempt would be highly laudable, — were it possible to carry it out. But experience shows that the experientialists are just as metaphysical as any other philosophers, with this difference, however, that their pre-conceived ideas not being recognized by them as such, are much more insidious and much more apt to fly in the face of all the facts of observation. (*CP* 7.485; cf. Fairbanks 1970)

Would such an observation pertain more broadly to positivists, in general, and not only to the experiential positivists like Mach? This question opens up a nest of complications. To begin with, it suggests the possibility that self-styled (or *soi disant*) positivists—those proclaiming their own philosophic systems, doctrines, or programs to be some brand of Positivism—might turn out not to be true positivists at all, in their real practice. But we can't even make sense of that possibility unless we have a *conceptual* basis for identifying positivism, instead of just relying on whether they claim that label for themselves. Phillips (2004: 67) quotes Sandra Harding:

But it is widely recognized in the social studies of science that although fewer scientists, philosophers, and social scientists who model their work on the natural sciences are as openly enthusiastic about positivism than was the case forty and more years ago, most of these people still happily embrace fundamental assumptions of positivism. (Harding 1991: 79)

But what, exactly, are the 'fundamental assumptions of positivism'? Phillips comments that Harding's words 'touch on an issue that was central in the 1983 essay, namely the way in which the category of "positivism" is to be delineated; undoubtedly the label is now used rather loosely' (2004: 67-68).

We have quoted Peirce's remarks on the experiential or empiricist positivism of Mach, but Phillips (2004: 75) argues

... it is clear that logical positivism is a type of empiricism, and that not all varieties of empiricism are positivistic. Thus the death of logical positivism leaves other varieties of empiricism relatively unscathed although perhaps a little shaken. And yet the neo-Marxist philosopher of education, Kevin Harris, stated over-simply that logical positivism is 'empiricism's philosophical backbone' (Harris 1979: 30). The truth could well lie in the other direction.

So, is empiricism the backbone of positivism, or vice-versa? Or could the 'backbone' of positivism be something else?

In his penetrating discussion of the historical and theoretical relationship between positivism and pragmatism—and particularly Carnap and Peirce—David Gruender comments that 'in sharp contrast to [Peirce's] approach, the positivist program is an extension of the medieval maxim': 'Nothing in the mind that is not first in the senses', and that this 'program is pretty well laid out by William of Ockham' (Gruender 1982: 202, 200, 210 n. 25). This suggests that empiricism is indeed the backbone or the core of positivism, so as to warrant seeing 'positivism' at work five centuries before Comte. According to Simon 'The word "positivism" was coined by Auguste Comte in the 1820's. To understand the history of the idea behind the word, however, it is necessary to look at the eighteenth and even at the seventeenth century' (Simon 2003). Comte himself regarded 'the preponderance of the positive philosophy' as 'growing steadily since Bacon's time' (Comte 1988 [1830]: 20), and claimed that 'all competent thinkers agree with Bacon that there can be no real knowledge except that which rests upon observed facts' (Comte 1988 [1830]: 4).

Against this tendency to define positivism on the basis of empiricism, however, I want to argue that the real core, or the 'backbone' of positivism, is its presupposition of the *positive*. I

contend that, for positivism, more fundamental than reliance on observation, per se, is reliance on the presupposed *positivity* of what is being observed, and the positivity of the sense derived from observation, and then (re-)presented in linguistic communication and construction of more complex theories and ideas. Bacon himself insisted not just on observation, but on the positivity of facts observed; for example in Aphorism 48, Book 2 of the *New Organum* (1992 [1620]), where he says, ‘these phenomena ought rather to be received as results of observation, and merely positive facts.’ Such strictures apply to our investigation even of ‘the most general principles in nature,’ which, he again insists, ‘ought to be held merely positive, as they are discovered, and cannot with truth be referred to a cause’ (Bacon 1992 [1620]: Bk. 1 Aph. 48). Positivity pertains not just to our manner of knowing, but is seen as a mode of existence in nature itself: ‘By principial nature I mean that which exists in the nature of things positively, and not as the effect of any antecedent nature’ (Bk. 2 Aph. 18).

But if the core of positivism is in a presupposition of the ‘positive,’ we need a clear idea of what that means. We might turn for help to the reputed ‘founder’ of Positivism, Auguste Comte. Upon reviewing his ‘brief sketch of the intellectual character of Positivism,’ Comte proclaims that

all its essential attributes are summed up in the word *Positive*, which I applied to the new philosophy at its outset. All the languages of Western Europe agree in understanding by this word and its derivatives the two qualities of *reality* and *usefulness*. ... The term also implies in all European languages, *certainty* and *precision*, qualities by which the intellect of modern nations is markedly distinguished from that of antiquity. ... Again, the ordinary acceptance of the term implies a direct *organic* tendency. ... By speaking of Positivism as organic, we imply that it has a social purpose; that purpose being to supersede Theology in the spiritual direction of the human race. (Comte 1957 [1848]: 62)

Here we find Comte writing as an effusive evangelist for Positivism, rather than as a careful and precise positive theorist (recall Peirce’s ironic comment above on empiricists).

Analyzing a somewhat similar passage, Habermas observed that ‘Comte’s philosophy of science can be reduced to methodological rules, all of which are supposed to be covered by the term “positive”:

... In his discourse on the spirit of positivism, Comte provides a semantic analysis of the word. He uses ‘positive’ to refer to the actual in contrast to the merely imaginary (*réel-chimérique*) what can claim certainty in contrast to the undecided (*certitude-l’indécision*), the exact in contrast to the indefinite (*le précis-le vague*), the useful in contrast to the vain (*l’utile-l’oïseux*), and, finally, what claims relative validity in contrast to the absolute (*le relative-l’absolu*). (Habermas 1971: 74)

In his critical analysis of Comte’s arguments, Habermas shows how positivism—at least in this denomination—overtly rejects metaphysics, while it becomes more fundamentally dependant upon ‘the very metaphysical system that has been withdrawn from circulation’ (80), such that their own metaphysics is no longer visible to positivist thinkers, even as they rely upon it all the more. Habermas concludes that ‘If science differs from metaphysics in describing facts and relations between facts, the problem of demarcation leads to the problem of what the significance of the positivity of facts actually is’ (81).

We are impressed, once more, with the need for a conceptual basis for identifying positivism, so as not to rely on the ecclesiastical authorities in one or another of the Positivist denominations. A good start is provided by this excerpt from the definition of ‘positivism’ in *A Dictionary of Philosophy*:

The term ‘positive’ has here the sense of that which is given or laid down, that which has to be accepted as we find it and is not further explicable; the word is intended to convey a warning against the attempts of theology and metaphysics to go beyond the world given to observation in order to enquire into first causes and ultimate ends. (Flew and Priest 2002: 322)

To paraphrase a memorable catch-phrase from the 1992 US Presidential campaign, ‘It’s the *positivity*, stupid’: We find reliance on positivity as the fundamental and essential core that Comte’s Positivism, the Logical Positivism of the Vienna Circle, and the Legal Positivisms of Austin, Hart, or Kelsen have in common. It is this core idea—not the fact that they have all appropriated ‘Positivism’ as part of their brand names—that warrants our recognition of them all as different brands of the same philosophic tendency. On this basis, Hobbes is a positivist in his legal philosophy as well as his ontology and his epistemology, regardless of the fact that ‘positivism’ was not a label he or anyone was using this way at the time.<sup>1</sup>

In this paper I am arguing that a presupposition of positivity lies at the core of a lived ideology that pervades education practice, with disastrous consequences that can be avoided only if that ideology is displaced by practice informed by a consciousness of semiosis. Instead of brand-name Positivism, espoused by thinkers who argue explicitly for systems of thought based on Positivist principles, I am concerned with practices and ways of thinking shared by the general public as well as professionals in education who normally have no occasion to think about such presuppositions, which may remain implicit in the logic of discursive practices even if they have not been considered consciously, and have not been recognized explicitly as tenets of belief. (To put this in the language of the analytical philosophers themselves: rather than going with an *extensional* definition, generalizing from the examples of whatever has been known historically as ‘Positivism,’ I am venturing an *intensional* definition, by which discursive practices are recognized as positivistic to the extent that they presuppose such positivity.)

The logical presupposition of unrecognized principles might seem elusive, and it may be a claim that’s hard to justify. The first task, however, must be to further clarify the meaning of what I am claiming as the presupposition of such positivity. For this, I begin with Exhibit B: ‘the meaning of  $5+2=7$ ’.

### 2.3. Exhibit B: ‘the meaning of $5+2=7$ ’

On its official Website, the Core Knowledge Foundation describes ‘Core Knowledge’ as ‘A School Reform Movement ... taking shape in hundreds of schools where educators have committed themselves to teaching important skills and the Core Knowledge content they share within grade levels, across districts, and with other Core Knowledge schools across the country (Core Knowledge Foundation 2006a). The network of Core Knowledge schools is one small part of E.D. Hirsch’s influence since publication of *Cultural Literacy: What Every American Needs To Know* (1987). I am concerned with Hirsch, however, not as someone whose own original ideas have had an influence on education, but more as someone who is *exceptionally explicit* in articulating ways of thinking that are *pervasively implicit* in discursive practices of pedagogy as well as education policy and administration.

In a more recent book, Hirsch offers this example in an explanation of constructivism:

The nature of one’s constructed understanding is normally irrelevant to the means by which one constructed it. Once a person has constructed the meaning of  $5+2=7$ , the procedure by which he or she gained that understanding becomes a matter of complete indifference. (Hirsch 1999: 134)

The ‘meaning of  $5+2=7$ ’ is no doubt the meaning of the proposition, which could be represented with different expressions—with the numbers spelled out in words rather than Arabic numerals, or in French or Chinese words rather than in English—different sentences or different written or vocalized representations of the same sentences, but all containing the same propositional meaning.

We are so accustomed to the implicit idea of propositional school knowledge that we seldom, if ever, stop to think about the notion of meaning as a content that is POSITed in proPOSITions., or as *content* that is fully *contained* in the meaning of the proposition. As should be expected, these have been matters of concern to the philosophers for whom such matters are their business, as compared with educators, students, parents, and the public, who focus on education using the repertoire of ideas they have at hand, without always reflecting back on the presuppositions embedded in those resources.

As it happens, ‘ $5+2=7$ ’ was used by Rudolf Carnap, perhaps the most accomplished positivist philosopher in the twentieth century, for the very purpose of explaining the nature of ‘meaning’ (in the sense of ‘sense,’ or *Sinn*):

in the sentence which contains the sign ‘ $\langle 7 \rangle$ ’, we may replace it by ‘ $\langle VII \rangle$ ’, for the *sense statement* asserts that I have a representation of the number seven, and this fact can be expressed equally well with any of the three signs  $\langle \text{seven} \rangle$ ,  $\langle 7 \rangle$ ,  $\langle VII \rangle$ . On the other hand, the statement, ‘I just had the representation  $\langle 5 + 2 \rangle$ ’ does not necessarily have the same truth value; it is not required that I should have had a representation of the sum of five and two. .... By the *sense* of a sign we mean that which the intensional objects, i.e., representations, thoughts, etc., which the sign is to evoke, have in common. 7 and VII have the same sense, namely, the number seven as the content of a representation or thought;  $5 + 2$  has a different sense. Hence,  $\langle 7 \rangle$  is the same as  $\langle VII \rangle$ , but  $\langle 5 + 2 \rangle$  is something different. (Carnap 1969: 74-76).

Note how the *sense* of summing  $5+2$  is supposedly contained in the expression  $\langle 5 + 2 \rangle$ , but not in the expression  $\langle VII \rangle$ . This is the case, of course, only if we blind ourselves to how the VII is made up of V and II, or V and I and another I. Sense-making in the elementary mathematics classroom is far less limited and limiting. For mathematics educators, the very purpose of using Roman numerals would be in helping students to develop a more robust and ramified number sense, in which VII is fluently recognized as equivalent in meaning either to 7 or to  $5+2$ .

Carnap’s use of  $5+2$  (rather than, say,  $4+3$ ) might seem fortuitous for my purposes here, but it also suits Carnap’s own purposes as well. The very correspondence between VII and  $5+2$  actually dramatizes more sharply the meaning of the differentiations he is drawing in that section of the *Aufbau* between ‘sign statements,’ ‘sense statements,’ and ‘nominatum statements’ (Carnap 1969: 74-76). For Carnap, it is helpful to make clear that *despite* the correspondence between VII and  $5+2$ , ‘the sum of five and two’ is not contained within the sense-meaning (*Sinn*) of  $\langle VII \rangle$ , although it is contained within the sense or *Sinn* of  $\langle 5 + 2 \rangle$ .

In his devastating critique of the ‘Two Dogmas of Empiricism,’ Quine challenged the basic ‘concept of *meaning* which is presupposed’ by the distinction between analytic and synthetic statements; and he pointed, in particular, to the problematic notion of containment that is implicated in the conception of an analytic statement as one that ‘attributes to its subject no more than is already conceptually contained in the subject’ (Quine 1980 [1961]: 20-21, Quine’s emphasis). In personal correspondence with Quine, Carnap responded:

The difference between analytic and synthetic is a difference internal to two kinds of statements inside a given language structure ... ‘Analytic’ means rather much the same as true in virtue of meaning ... the truth of an analytic sentence

depends on the meaning, and is determined by the language rules and not the observed facts ...

It follows from this clarification that the analytic-synthetic distinction can be drawn always and only with respect to a language system, i.e., *a language organized according to explicitly formulated rules, not with respect to a historically given natural language.* (Carnap 1990 [1952]: 432, emphasis added)

When Hirsch writes about ‘the meaning of  $5+2=7$ ’ as a meaning that, once constructed, renders irrelevant the course of how it was constructed, he presupposes an idea of meaning as something that can be ‘conceptually contained’ in the construct itself, without the continuing involvement of its historical and ongoing formation. Carnap is clear that what he is talking about is propositional meaning in the kind of artificial and explicitly rule-governed formal language system that he is attempting to develop. He is careful to avoid making claims beyond the limitations of his project. He has not claimed, for example, to have shown us how to think about the kinds of meaning students come to understand in the meaning of ‘due process,’ for example, or the meaning of ‘ $5+2=7$ ’. We see here a clear example of the difference between the more cautious and circumscribed claims asserted in support of an explicit positivist philosophy, and the less self-aware and unconditional presuppositions of an implicit ideology of positivism.

Again, though, we should ask: If we see such a great difference between explicit positivist philosophy and what I am calling an implicit ideology of positivist presuppositions, what exactly is it that they have in common—what makes them both forms of positivism? What exactly is the essential earmark of positivism, as such?

My own answer, suggested above but not yet well elucidated, is that positivism—formal and explicit, or informal and implicit—is constructed on the basis of *positivity*. Ironically, we can begin to see this POSITivity, hiding in plain sight in the language of proPOSITIONal meaning. The sense of what’s propounded in the proposition is limited to the kind of sense that’s given in the data. The word ‘data’ is the plural form of ‘datum,’ a Latin participle literally meaning ‘[something] given.’ But the *datum* here is also a *positum*, or ‘[something] posited’ —something ‘given or laid down [posited, deposited]’ as in the dictionary definition excerpted above: ‘The term “positive” has here the sense of that which is given or laid down, that which has to be accepted as we find it and is not further explicable ...’ (Flew and Priest 2002: 322).

Carnap’s project is based on ‘the given,’ and involves a methodological ‘reduction of “reality” to the “given”’ (Carnap 1969: 7), with the proviso that ‘the basis of the constructional system’ can ‘be described as *the given*,’ but only on the understanding that ‘we must realize that this does not presuppose somebody or something to whom the given is given’ (Carnap 1969: 98, 102, Carnap’s emphasis). This is not an empiricism based on the empirical experience of particular empirical subjects (Carnap 1969: 103-106). *Data*, understood positivistically, is *posita*—something that’s objective *positively*: i.e. objective on the basis of its positivity.

#### 2.4. *Legal positivism, authority, and meaning in curriculum*

With our focus on *positivity*, we can now recognize this as a fundamental principle that unites legal and epistemological positivism, which are often treated as genetically separate traditions that happen to share some other similarities, besides just the label ‘positivism.’ Legal positivism is virtually unknown in the education literature, as confirmed by an exhaustive electronic full-text search of contents in the six journals published by the American Educational Research Association between the years 1931 and 2000 (AERA 2003). As we shall see, however, the continuity of legal and epistemological positivism, based on the presupposition of positivity, has enormous ramifications for curriculum.

In legal philosophy, understanding of the word ‘positive’ reflects the use of that word in distinguishing ‘positive law’ from ‘natural law,’ as in this dictionary definition:

**positive law**

n. statutory man-made law, as compared to ‘natural law,’ which is purportedly based on universally accepted moral principles, ‘God’s law,’ and/or derived from nature and reason. The term ‘positive law’ was first used by Thomas Hobbes in *Leviathan* (1651). (LAW.COM Dictionary)

This is reflected in Hart’s reference to ‘the issue between Natural Law and Legal Positivism’ (Hart 1997 [1994]: 185). Although there are substantial differences between Hart (or other later Legal Positivists) and the earlier legal positivism of Austin, Bentham, or Hobbes, what they all have in common is reliance on the *positivity* of laws *as laws*—as laws that create enforceable obligations, rather than other kinds of social or moral norms that lack legal status and effect.

Goldsmith explains that

Hobbes is not only a command theorist but also a legal positivist. Legal positivism denies that general principles of justice, morality, or rationality (as such) are criteria of the validity of law. Crudely, it denies that laws need be just, right, moral, or good in order to be laws. Instead, law is distinguished by a procedural (or, in Ronald Dworkin’s term, a pedigree) test: viz., it has been perceptibly signified as the legislator’s command. (Goldsmith 1996: 275)

For legal positivism, ‘the legislator’ may be a monarch, an elected legislative body, a local school board, or whoever there is in the legal system who has the power to legislate with binding legal authority. In the example of the ‘due process’ standard discussed above, the ‘standard’ for fifth-graders is regarded as law, having obligatory legal force, by virtue of its endorsement by the Delaware State Legislature. Later in this paper we will see examples that feature both school boards and state legislatures as sources of positive law in education. Those examples will be used to demonstrate the serious consequences for education that result from the widespread presupposition of positivity, both in education law and policy, and in classroom pedagogy. Before we can get to those examples, though, we need to clear our way a bit more through the jungle of ideas about positivism that threaten to obscure our view of positivity.

According to Austin, ‘Every law or rule ... is a *command*. Or, rather, laws or rules, properly so called, are a *species* of commands’ (Austin 1984 [1832]: 5-6); and he explains that ‘every law properly so called is a *positive* law. For it is *put* or set by its individual or collective author, or it exists by the *position* or institution of its individual or collective author’ (130, Austin’s emphasis). The *Oxford English Dictionary* (2<sup>nd</sup> edition, 1989) quotes this passage as an example of its first definition for ‘position’: ‘The action of positing; the laying down or statement of a proposition or thesis; affirmation, affirmative assertion. Chiefly in *Logic* and *Philos.*’

A law, in Austin’s view, is something that is commanded or mandated: what we might call a *res mandatum*. With this, we can now recognize that *positive laws*, as *rei mandata*, are a command-theory legal positivist’s counterpart to ‘*the given*,’ or the *rei data* of epistemological positivists such as Carnap. What legal *mandata* has in common with scientific *data* is that both are to be regarded as *posita*—they are two ‘species’ (in Austin’s way of speaking) of *rei posita*, or things posited. Recognizing *data* and *mandata* as species of *posita*, we can begin to see the common fundament underlying diverse forms of positivism: whether command-theory legal positivism or more recent forms of legal positivism (such as the post-Wittgensteinian legal positivism of H. L. A. Hart, for whom the key is not *mandata* but rather social rules as a specific form of *given* (data))—whether legal positivism or epistemological positivism, or whether explicitly theorized positivism (in any of these forms) or the implicit, generally unconscious ideological presupposition of positivity in the discourses and practices of education.

To see the commonality among positivist movements in philosophy, it is helpful to appreciate their common origins and persisting preoccupations with authority and truth. Traditionally, authority is recognized as a problem for legal positivism, while truth is the concern of epistemological or cognitive positivism; and these are seen as distinct traditions with different historical origins. A different story could be told, however, in which both streams are seen to spring from currents of resistance to the undivided legal and cognitive authority of the Papacy, leading up to the Reformation. McGrade (1974: 48-63) shows how William of Ockham ‘transform[ed] the concept of legitimate correction from a primarily disciplinary or authoritative concept to a primarily cognitive one’ (63), and how ‘the consequences of this step radiate throughout the plans of action’ developed in his writing, including the deflation of the Pope’s secular authority from that of sacerdotal primacy to that of a ‘specifically legal relationship of vassalage’ (90-91; cf. O’Donovan 1991: 11-27)).

With truth and authority decoupled from Divine Supremacy, some of the most important thinkers since the Reformation period in England have been acutely interested in notions of positive law and positive knowledge. Wheeler tells us:

The philosophy of English positivism grew directly out of the theology of the English Reformation, whose theologians were more Erastian than Erastus. Chief among these was Richard Hooker, known as the judicious Hooker. He brilliantly rationalized the theology of the break with Rome. Bacon merely scientized Hooker’s Erastian formula for the state. Positivism began as little more than a doctrine of scientific Erastianism. (Wheeler 1983: 299)

Although, in some sense, Bacon’s vision of scientific inquiry might be described as a scientization of ‘Hooker’s Erastian formula for the state,’ such description seems to miss the fundamental role of positivity. Wheeler characterizes positivism as a philosophy that ‘grew directly out of’ Reformation theology. Scientific positivism is viewed as ‘merely’ an extrapolation of Hooker’s formula; and positivism is ‘little more than’ scientific Erastianism. It would seem that in Hooker’s ‘brilliant rationalization,’ he came up with Positivism as a formula for separating Church and State—a formula that Bacon ‘merely’ extended into the realm of scientific inquiry.

Wheeler emphasizes the dualisms at the heart of Bacon’s positivism:

Scientific Erastianism requires the separation of religion and science. This means no more than that the two things are different, and that their different qualities do not interpenetrate each other. The result was a genuine dualism. ...

Francis Bacon was a dualist. In fact, he lived quite comfortably with an entire collection of dualisms, one for almost every field he studied: theology and science, divine and secular, faith and reason, fact and value, law and prerogative. ...

The philosophy of positivism, which included from birth both the natural and social sciences, encompassed and maintained all the above dualisms. (300)

Wheeler is being consistent, here, with the traditional recognition of a family of such fact/value dualisms as the hallmark of positivism. We saw this in Goldsmith’s explanation of legal positivism (above), where he was elaborating on his claim that ‘Hobbes is not only a command theorist but also a legal positivist’ (Goldsmith 1996: 275). My contention is that, no matter how importantly the fact/value and related dualisms may figure as motivations and/or as outcomes of positivist thinking, it is the presupposed *positivity of the given*, or the *posita*—whether *data* or *mandata*—which is not just a hallmark, but the distinctive DNA of positivism.

‘Positive law’ was discussed at length by Hooker (Hooker 1907 [1593]). (Hooker discussed ‘positive law’ in those words, almost sixty years before Hobbes’s *Leviathan*, contrary

to the ‘positive law’ definition quoted above). Hooker wrote that ‘laws do not take their constraining force from the quality of such as devise them, but from that power which doth give them the strength of laws’ (Hooker 1907 [1593]: 193). Similarly, Watkins tells us that for Hobbes ‘It is not because the sovereign possesses superior moral knowledge that his laws are automatically “just”’ (Watkins 1973: 129). It is true that these formulations evince fact/value dualism, and that they did serve Erastian developments; but it would be a mistake to focus only on such dualisms as motivations or outcomes, in such a way that positivist theories of law, or science, are construed merely as rationalizations for an Erastian agenda.

Hobbes wrote that ‘no law can be unjust. The law is made by the sovereign power, and all that is done by such power, is warranted ...’ (Hobbes 1994 [1651-1668]: 229). Watkins quotes this line, but we must correct Watkins at once by noting that Hobbes does *not* say that the sovereign’s laws are ‘just’—automatically or otherwise.

Here’s what Hobbes does say:

To the care of the sovereign, belongeth the making of good laws. But what is a good law? By a good law, I mean not a just law: for no law can be unjust. The law is made by the sovereign power, and all that is done by such power, is warranted, and owned by every one of the people; and that which every man will have so, no man can say is unjust. It is in the laws of a commonwealth, as in the laws of gaming: whatsoever the gamesters all agree on, is injustice to none of them. A good law is that, which is needful, for the good of the people, and withal perspicuous. (ibid.)

... a law that is not needful, having not the true end of a law, is not good. (ibid.)

Elsewhere, Hobbes writes that ‘A fool may win from a better gamester by the advantage of false dice, and packing of cards’ (Hobbes 1995 [1662]: Pt. 1, p. 211). The rules of a card game dictate how many cards, what suits, and the denominations, will make up the deck of cards. By rule, the game of pinochle is played with a deck of forty-eight cards. Hobbes would say that this may be a good rule or not a good rule in terms of how well it serves the purposes of the game of pinochle. It would make no sense to claim this rule to be ‘unjust’; but it likewise makes no sense to say this rule is ‘just.’ The rule is (positively) what it is, and means (positively) what it means, without regard for ‘justice’ or ‘injustice.’ It might not be a ‘good’ rule, if some alternative would make a better game of pinochle; but until the rule is changed, it still is the rule—and in that (positive) sense it is ‘owned by every one’ of the game’s players and spectators.

This obviously resonates with the logical positivists’ view that moral or aesthetic value statements are neither true nor false, since they are not making the kind of propositional claim about the world that could be evaluated as being ‘true’ or ‘false.’ More surprisingly, perhaps, it resonates as well with Wittgenstein’s ideas about the constitutive rules of language games: ‘Like the rules of a game, Wittgenstein argued, these rules for the use of ordinary language are neither right nor wrong, neither true nor false: they are merely useful for the particular applications in which we apply them’ (Kemerling 2001). Finally, just such a post-Wittgensteinian perspective is resonant in Hart’s rule-theory approach to legal positivism:

... Hart emphasizes the idea that law consists in *rules*, in particular, *social rules*. ... Social rules have both normative and descriptive dimensions. Rather than being mere descriptions of what individuals are in the habit of doing (as, for example, the habit of obeying the commands of a sovereign), rules provide agents with reasons for doing what they do (as a rule), and with grounds for criticizing those who fail to follow suit.’ [*Sic!*—Cf. this example from a dictionary definition: ‘It’s not cricket to cheat at cards!’] (Coleman and Leiter 1999: 245-246; *The American Heritage dictionary of the English language* 1992: ‘cricket’ 2nd definition (Sports), p. 441)

Here, Coleman and Leiter are explaining how Hart's rule-theory legal positivism differs from the command-theory approach of Austin (and, by extension, of Hobbes and Bentham). Yet, we can now see the fundament of positivity that unites these strains of legal positivism; and, at the same time, unites legal and epistemological positivism, as well.

In his work on 'Philosophical Rudiments Concerning Government and Society,' Hobbes declares that

Wisdom, properly so called, is nothing else but this: *the perfect knowledge of the truth in all matters whatsoever*. Which being derived from the registers and records of *things*; and that as it were through the conduit of certain definite appellations; cannot possibly be the work of a sudden acuteness, but of a well-balanced reason; which by the compendium of a word, we call *philosophy*.

(Hobbes 1995 [1651]: Dedicatory letter, original emphasis)

Here we see the positivist declaration of independence: independence from the epistemological authority of metaphysical speculation (e.g., Aristotle), as well as from the epistemological and legal authority of the papal church. Henceforth, what is known as the truth concerning physics and geometry, and what is known as the truth concerning law and morals, will be 'derived from the registers and records of *things*; and that as it were through the conduit of certain definite appellations.' Those 'things' themselves (whether rocks, triangles, or the commands of the sovereign) are positive in their ontology. The words, propositions, and commands that comprise our records and registers serve as conduits to convey the positive sense and meaning of the truth and of the law. The unified character of this sweeping, comprehensive positivist program can be seen outlined in the Contents of *Leviathan*, beginning with the first chapters on 'Sense,' 'Imagination,' and 'the Consequence or Train of Imaginations'; running through the chapters on 'Speech,' on 'Reason and Science,' and on 'the Several Subjects of Knowledge'; to chapters on 'the Nutrition, and Procreation of a Commonwealth,' on the Public Ministers of Sovereign Power, and on 'Civil Laws'; and beyond (Hobbes 1994 [1651-1668]).

In this discourse, knowledge is something that can be conveyed through 'conduits.' Hobbes writes of education generally, and the role of universities in particular, as 'the means and conduits by which the people may receive [the] instruction' which he has described as necessary for the well-being of a healthy Commonwealth (Hobbes 1994 [1651-1668]: 225). The truth-value of knowledge, and the authority-value of law, may be preserved through the uncontaminated, undistorted sense-value of words and statements that convey the cognitive sense of knowledge propositions, and the imperative sense of legal commands.

Hobbes saw his own work on optics and visual perception as allied with Harvey's work on the circulation of blood (Shapin and Schaffer 1985: 127). Ideas of circulation and conveyance play key roles in Hobbes's project of extending the kind of science that was then advancing so triumphantly in fields like physical mechanics and physiology into the fields of his own concerns, as a new science of the mechanics of human persons, states, and societies. Just as truth-value is preserved in the sense-value conveyed through words, and knowledge is conveyed through schools and universities, so too is economic value conveyed through the 'conduits' of public revenue and public payments (Hobbes 1994 [1651-1668]: 164) — expressed in the metaphor of nutrient value conveyed through conduits within the human body:

The Nutrition of a commonwealth consisteth, in the *plenty* and *distribution* of *materials* conducing to life; in *concoction* (or *preparation*); and (when concocted) in the *conveyance* of it, by convenient conduits, to the public use. (id., 159)

Just as the nutrient value of vitamins and proteins is preserved in culinary concoctions that convey such value through the conduits of our bodies, and the economic value of material resources is converted into that of industrial products and commodities for commercial circulation, so too is the epistemic value of positive sense-data 'concocted' through the kinds of sense- and

truth-preserving operations detailed in Hobbes's 'Computation or Logic' (Hobbes 1839 [1655]: 1-90), or in the 'construction project' of Carnap's 'Logical Structure of the World' (Carnap 1969).

This positivist project is continuous throughout. In Locke's account, the 'ideas' of colors, sounds, tastes, and smells are 'received' and 'admitted' by our sense organs (the eyes, ears, nose, and palate), and then conducted by the nerves 'which are the conduits to convey them from without to their audience in the brain, the mind's presence-room (as I may so call it)' (Locke 1995 [1689]: Bk. 2 Ch. 3. Sec. 1). Through the concoctions of our reasoning, the truth-value of ideas is preserved through the proper use of words and propositions, for '... words are looked on as the great conduits of truth and knowledge, and ... in conveying and receiving of truth, and commonly in reasoning about it, we make use of words and propositions ...' (id. 4.5.10). Hence the critical importance of *proper* language use, for

... language being the great conduit, whereby men convey their discoveries, reasonings, and knowledge, from one to another; he that makes an ill use of it, though he does not corrupt the fountains of knowledge, which are in things themselves; yet he does, as much as in him lies, break or stop the pipes, whereby it is distributed to the public use and advantage of mankind. (id. 3.11.5)

Again, as in Hobbes, this provides the background for how education is understood, with 'speech being the great bond that holds society together, and the common conduit whereby the improvements of knowledge are conveyed from one man, and one generation to another' (id. 3.11.1).

We are about to see more examples of such ideas at work in the discourses and practices of education in the United States today. First, however, we should pause to notice what it is that sets this account of positivism apart, in my view, from the more familiar story. Hobbes and Locke have always been regarded as pioneers of empiricism, and positivism has traditionally been conjoined—some would say conflated—with empiricism. So what has been my point in belaboring the continuity?

My point has been to call attention to the *positivity* in positivist discourse. I believe this has not traditionally received the attention it deserves, compared with more familiar features such as fact/value dualism, either in terms of its importance for the cohesiveness of positivist thought (including legal as well as epistemological positivism), or its consequences in practical fields such as education, which is my own concern.

In Locke's account,

Whatsoever doth or can exist, or be considered as one thing, is positive; and so not only simple ideas and substances, but modes also, are positive beings: Though the parts of which they consist are very often relative one to another: But the whole together considered as one thing, and producing in us the complex idea of one thing, which idea is in our minds, as one picture, though an aggregate of divers parts, and under one name, it is a positive or absolute thing, or idea. (Locke 1995 [1689]: Bk. 2. Ch. 25. Sec. 6)

Locke argues that, for a painter or dyer, 'the idea of black is no less positive in his mind, than that of white, however the cause of that colour in the external object may be only a privation' (id. 2.8.3). When he goes on to tell us that 'the picture of a shadow is a positive thing' (id. 2.8.5), Locke provides an example that is quite illuminating for our purposes:

I ... appeal to every one's own experience, whether the shadow of a man, though it consists of nothing but the absence of light (and the more the absence of light is, the more discernible is the shadow) does not, when a man looks on it, cause as clear and positive idea in his mind, as a man himself, though covered over with clear sunshine? and the picture of a shadow is a positive thing. (ibid.)

If, indeed, education is understood (explicitly or implicitly, in our theories or in our practices) as a trafficking in positive ideas, then Locke's account itself inadvertently suggests how this could effect a reduction to education à la Silhouette. Not only is the idea of the silhouette a positive idea, but it is no less so than the positive idea of the man himself bathed in light; so the idea of the illuminated man and the idea of the silhouette are no different from each other in their positivity. What does this mean, for education? Let's proceed with some examples.

## 2.5. *In the courts: Judicial discourse on education law, policy, and practice*

The language of education as a conduit for positive ideas and values is remarkably explicit in opinions by Justices of the Supreme Court of the United States in the 1982 *Pico* case, in which high school students and their parents brought suit against the local Board of Education, claiming that its action in removing selected books from the curriculum and school libraries violated a Constitutionally-protected right to receive information and ideas. On the question of whether public school students have any Constitutional rights that might have been violated in this case, the Supreme Court split down the middle, with the side that has become dominant in the time since then ruling that there are no such rights protected by the Constitution.

The four Justices on that side of the Court each wrote their own opinion, as well as joining Burger's 'dissent'. In his opinion, Chief Justice Warren Burger wrote, 'by choosing not to retain certain books on the school library shelf [the government] simply chooses not to be the conduit for that particular information' (*Pico* 1982: 889). The question concerns the sovereign's power to choose the information to be conveyed through the schools as conduits. Justice Rehnquist, in his opinion, refers to schools as 'the one public institution which, by its very nature, is a place for the selective conveyance of ideas' (915), and he explicitly defines education accordingly: 'Education consists of the selective presentation and explanation of ideas' (914).

We see here the ideological conjunction of the positive legal authority of decisions by the sovereign, and the positive content of ideas and values. As Chief Justice Burger explained:

Presumably all activity within a primary or secondary school involves the conveyance of information and at least an implied approval of the worth of that information. How are 'fundamental values' to be inculcated except by having school boards make content-based decisions about the appropriateness of retaining materials in the school library and curriculum[?] (889)

In his opinion, Justice Powell (who had served as chairman of a local school board before his term on the Supreme Court) argued to uphold the authority of school boards to instill ideas and values in its students, and to do so partly by excluding what they decide 'are not our ideas or values' (896-897). The positive identity of meaning in the ideas conveyed through texts is determined to consolidate the positive identity of the democratic sovereign polity itself.

The positivity of meaning is also presumed in Rehnquist's argument that books can be removed because of potentially objectionable language without suppressing the ideas contained within those books, since this would not 'preclude discussion about the themes of the books or the books themselves' (919). Just as, for Hirsch, the meaning of '5+2=7' is reduced to the positive sense (*Sinn*) contained within the abstract proposition that may be represented variously in its verbal or written expressions, so also Rehnquist treats the removed books (in this case, novels such as *Black Boy* by Richard Wright and *The Fixer* by Bernard Malamud, anthologized short works including Swift's *Modest Proposal*, and *Soul On Ice* by Eldridge Cleaver) as containers for a kind of sense-content that, as positive ideas, could be delivered to the students without the potentially objectionable language in which they are expressed within the texts themselves.

The presumption of positivity is equally evident on the other side of the Court in *Pico*, among the Justices who argued that the students do have Constitutionally protected rights that might have been violated in that case. Justice Blackmun embraced Rehnquist's definition that '[education] consists of the selective presentation and explanation of ideas,' and used it in framing his own arguments in support of the students' rights (881). Justice Brennan argued that the students' rights could have been violated, for example, if removal of Alice Childress's book, *A Hero Ain't Nothin' but a Sandwich* (1973), deprived them of the information that George Washington was a slaveholder (*Pico*, p. 873). No less than the opinions on the other side in *Pico*, this argument presumptively reduces the meaning of the text to a positive propositional content, oblivious to the richer, subtler, more complex and nuanced ironies of Childress's work (cf. Whitson 1994: 21).

For the jurists on both sides, it is a question of what Constitutional limits there are, if any, on the sovereign's positive authority to select positive meaning-contents for curriculum. As one court succinctly put it, 'The whole range of knowledge and ideas cannot be taught in the limited time available in public school. ... The authorities must choose which portions of the world's knowledge will be included in the curriculum's programs and courses ...' (*Mercer v. Michigan State Board of Education* 1974: 586). As in the Rehnquist definition, the underlying positivist assumptions are not justified or even argued for; they are simply presupposed, with no sign of an awareness that there is anything questionable here that is being presupposed.

## 2.6. *In classrooms: Minick's examples of 'representational directives'*

Outside of school, in the 'real world' of literary experience, we are well aware of the polysemious potentialities of text and language. Such potentialities are relished and treasured in genres such as fiction and poetry; while the author of a technical manual on airliner maintenance must learn how to exclude all but the intended meanings in a text. In any case, no one is a competently literate reader or writer of the language who is not attuned to the ways language actually makes sense.

Norris Minick describes two 'strikingly different' uses of the same poem that he happened to observe while videotaping two different first-grade classrooms. The teacher in one of these classrooms used a poem entitled 'Surprises,' by Jean Conder Soule, in the context of explaining the appearance of a visitor in the room with a video camera. 'The poem was used to convey the idea that surprises can come in an infinite variety of forms (including bald men in tweed jackets operating video equipment) and that they can often be fun, exciting, and quite positive things' (Minick 1996: 344). The other teacher, in a different first-grade classroom, followed her reading of the same poem by questioning the students in a way that required them to recall and repeat specific details mentioned explicitly in the poem, while not accepting as an answer anything that was not in the poem.

Minick uses the second classroom example to introduce his discussion of what he calls 'representational speech':

If there is a single 'feature' that differentiates 'representational' from 'nonrepresentational' forms of speech, it is a concern that the meaning of an utterance must correspond to what is actually represented in words. This concern is reflected at a rather elementary level in the second reading of the poem on surprises. On this reading, what we can learn about surprises from the text is restricted to what is actually said about surprises in that text; what the poem 'tells us' about surprises is restricted to what is explicitly stated in the language of the text itself. (346)

In our terms, we see first-graders being introduced to the poem as positive authority dictating its own positive meaning-content. Minick relates the general phenomenon to the historical development of what we see as the conjoint positivity of authority and meaning:

Clanchy's (1979) historical analysis of the role of written records in English law, for example, indicates that this concern with a clear and complete representation of meaning in language only emerged as the role of the written record shifted from that of a symbolic token representing the existence of an orally constituted contractual agreement to that of a 'definitive' statement of the content of the agreement. (346-347)

Scholars in Critical Legal Studies have shown that even in law, the idea of univocal meaning uniquely authorized by the will of legislators, parties to a contract, or other authors of a legal text is far from unproblematic. In literary studies, or in literacy and English/language arts education, we might expect there to be less interest in the idea of reading as a matter of identifying the uniquely authorized meaning of a text. Before E. D. Hirsch embarked on his campaigns for 'cultural literacy' and 'core knowledge,' however, he was known within his own academic field of literary theory and criticism as the most prominent advocate of such an approach, in works such as *Validity in Interpretation* (1967) and *The Aims of Interpretation* (1976). A critical exposition and deconstruction of Hirsch's arguments can be seen in Whitson (1991a: 144-151, 211-219).

Minick is concerned to understand the consequences for learning and cognitive development that may result from a concentration on 'representational speech,' especially as that involves a 'bracketing of situational sense' (348). Another classroom example shows how this is effected not only by insistence on the 'representational' meaning of the text or other lesson content, but on the instructional directives that students are required to implement. In some of the observed episodes, teaching pupils how to follow explicit directions to the letter, without interpreting the directions on the basis of an inexplicit understanding of the purpose of the activity, seems to be the very purpose of the classroom exercise. Another episode is reported as an illustration of how a teacher may resort to 'representational directives' as a way to complete the planned activity despite 'failure to communicate situational sense' (361):

Here, a second-grade teacher has devoted 5 minutes to explaining a task that involves 'number families' (e.g., 3, 4, and 7) and the four 'number sentences' that these number families can generate through the operations of addition and subtraction (i.e.,  $7-3=4$ ,  $7-4=3$ ,  $3+4=7$ ,  $4+3=7$ ). The task involves writing number families and number sentences in graphic forms presented on a worksheet so that they can then be cut out and fit into slots in a line drawing of a house. The resulting product is to be used as a puzzle to develop and assess knowledge of number families and arithmetic facts. (362)

After detailed reporting of the teacher's directions, student responses, and correction by the teacher, Minick notes:

... it is a misstatement to say that this speech style makes it *possible* to carry out the task without reference to situational sense. In fact, the way that this teacher organizes this activity makes it *necessary* to bracket situational sense in the interpretation of directives. In guiding her class through this task, the teacher selects one of a multitude of possible action sequences that could lead to successful task performance and demands that her pupils follow precisely that sequence. Other approaches to the task—which might be equally effective in completing the task—are forbidden. (364)

In the report of his study of high schools in the United States, Boyer reports an incident that may represent the consequences, at the secondary level, of students being trained like this from the first and second grades:

In one [high school] classroom, students were asked to find the weight of a brick after measuring its length, width, and height, and being given the value of its density in pounds per cubic inch. The exchange went something like this:

*Teacher:* 'Who can tell me the weight of the brick?'

*Student:* '1016 pounds.' (*Looking at his paper*)

*Teacher:* 'Lift the brick. Now, how much does it weigh?'

*Student:* (*Again looking at his paper*) '1016 pounds.'

The student had failed to make the connection between the problem and real life. Calculations were unrelated to common sense. This example was not an isolated incident. Time after time we witnessed the use of numbers with little or no thought given to implications and applications. (Boyer 1983: 108-109)

Boyer attributes to the student a failure to make connections; but Minick's examples feature students being rebuked for making connections on their own, and trained to bracket 'situational sense' in completing tasks through the implementation of 'representational directives' to the letter. What is implicit in this pedagogy is the idea, transcending particular activities, lessons, school subjects, and grade levels, that there are positive right answers, and that your job is to obtain these answers, which you can do by implementing the procedures dictated by positive authority. If the answer that you get is incorrect, you can trace back your steps to find where you went wrong; and by correcting the procedure, you'll come up with the right answer.

## 2.7. *In the lab: Superconductivity meets resistance of the positive*

The conjunction of positive authority and positive meaning is by no means limited to primary grades, or even to the elementary and secondary schools. At the highest level of academia—in graduate and postgraduate research in a Nobel-eligible physics research program—we have an interesting example in the relationship between junior and senior faculty researchers.

Labs around the world were racing to find a way to achieve superconductivity at higher and higher temperatures (from near absolute zero, to approaching ordinary room temperature). The crucial breakthrough appeared in a paper by IBM researchers in Switzerland (earning them the Nobel Prize), which showed the potential in using a certain kind of ceramic material, despite the general proposition that ceramics are not conductors of electricity, but are in fact used to resist electric current. Labs around the world were quick to take up this lead, but with this delay in one laboratory:

Word of the publication traveled to the University of Tokyo in October 1986, first reaching the younger scientist, Koichi Kitazawa. But he said nothing to his senior associate; for Tanaka had repeatedly warned him that there were too many claims of superconductivity, not worth chasing after.

[Professor Shoji Tanaka in taped interview, speaking in Japanese, with English interpreted voice-over]: To be honest with you, Mr. Kitazawa would not talk to me right away about the Bednorz and Müller paper. He thought that if he had told me about this paper immediately that he would be scolded. There had been another article— though the contents were completely different—and when he brought it to me I got angry at him and said, 'Why are you bringing me such a

stupid paper?’ And so I first learned of the Bednorz and Müller paper when a young student finally got the word out. (Garmon and Lyman 1988)

In an article on the relevance of philosophy of science for science education, Gruender comments on the positivists’ attempt to reconstruct science on the basis of certainly true propositions that are constructed from the positive sense-content of observations: ‘What observations we do make are subject both to error and to misinterpretation, as both Hegel and Peirce claimed. The “semantics” of neutrino theory, for example, could never be accommodated within such a constructed view’ (Gruender 2001: 90).

Curriculum theorist and developer Joseph Schwab noted the inadequacy of positivist “semantics,” a doctrine bearing about the same resemblance to the discipline of semiotic as does a newspaper account of satellites to a good physicist’s statement of a scientific theory’ (Schwab 1978 [1958]: 149). Schwab also used the neutrino as an example, arguing that science education must help students learn to understand the specific ways that claims are meaningful in particular discourses of different disciplines and areas of inquiry; for example:

Concerning each of these things, respectively, let us work with three assertions which are alike in form.

- A. The automobile in front of the house is black.
- B. The electron is a particle with a small mass and a negative charge.
- C. The neutrino is a particle with neither charge nor rest-mass. (Schwab 1978: 232)

Schwab explained how these assertions are different from each other in the ways that they are meaningful, qualified by the different particular discourses in which each one occurs. Members of the generally educated public, not to speak of scientists themselves, are badly educated if scientific statements—such as the statement that ceramics are resistors, not conductors of electric current—are regarded as propositions that are simply valid without limiting qualifications, so long as they have been constructed properly on the basis of observed positive data.

Schwab noted that

According to the semantical view, the grammatical question, addressed to the single word elements of the discourse, is answerable because a word—any word—is supposed to have one or a very small number of meanings conferred on it by proper usage. Consequently, a memory store of words and their meanings, plus a glance at context, is supposed to suffice for discovering the meanings of these elements. (Schwab 1978 [1958]: 150)

As Quine explained,

Taken collectively, science has its double dependence upon language and experience; but this duality is not significantly traceable into the statements of science taken one by one.

The idea of defining a symbol in use was, as remarked, an advance over the impossible term-by-term empiricism of Locke and Hume. The statement, rather than the term, came with Bentham to be recognized as the unit accountable to an empiricist critique. But what I am now urging is that even in taking the statement as unit we have drawn our grid too finely. The unit of empirical significance is the whole of science. (Quine 1980 [1961]: 42)

Hirsch himself uses the ‘electron’ as an example. Hirsch argues against what he describes as one ‘extreme’ view, according to which:

The meaning of a word in one theory is different from its meaning in another. When Niels Bohr used the word ‘electron’ in his theory of atomic structure, he was thinking of tiny solid spheres. When Erwin Schrödinger said ‘electron,’ he was thinking of tiny wave packets. The two theories are incommensurable because they are considering different things, and this will be the case for all theories. (Hirsch 1984: 222)

Observing that ‘most scientists regard current atomic theory as being an updated version of Bohr’s theory, not a repudiation of it,’ Hirsch concludes that there is just one and the same meaning in both Bohr’s and Schrödinger’s use of the word ‘electron,’ given a ‘scientific and everyday tolerance’ that is ‘based on our instinctive awareness of the *provisionality* of meaning’ (ibid.; original emphasis). Hirsch uses this example to illustrate his conception of ‘*Meaning ...* as a self-identical schema whose boundaries are determined by an originating speech event’ (204, original emphasis). Again, positive self-identity is encountered as a given—i.e., as a *datum* posited (or *positum*) in the prior speech event.

This problematic example from Hirsch also complicates Quine’s formulation. Quine argued that ‘The unit of empirical significance is the whole of science,’ intending this to include the entire discourse within which a term or statement is deployed. But is the ‘entire discourse’ in which Bohr theorized the same as that of Schrödinger? It turns out that Quine’s appeal to ‘the whole of science’ as the unit of significance may depend on the extent to which science is being written in a single coherent discourse. Hirsch argues that ‘electron’ has the same meaning for Bohr and Schrödinger, since they do share a single self-identical discourse—unlike (to use Hirsch’s own counter-example) the two discourses of phlogiston and oxygen, which Hirsch sees as truly different from each other, in a way that the discourses of Bohr and Schrödinger are not.

What is the basis, in principle, for these differing judgments? Hirsch appeals to common sense. Beyond that, there is no articulation of a principle for adjudicating between meanings and discourses that are ‘self-identical’ and those that are not. Nor are we given any reason to think that it makes sense to draw such a line for dichotomously classifying meanings and discourses as ‘the same’ or ‘different from each other’—beyond Hirsch’s intent to justify ‘the distinction between fixed meaning and changing significance’ (Hirsch 1984: 204), in support of his argument that the legitimate purpose of interpretation is to identify the fixed [positive] meaning of the text.

### 3. Semiology

The examples of electrons, neutrinos, and the superconductivity of ceramic materials help us see how problematic is the notion of fixed positive meanings in stable coherent discourses—even in physics, which comes perhaps as close as any discipline there is to being a paradigmatically unified discipline. Descriptively, that notion is all the more problematic in less unified disciplines such as history and sociology, and even other natural science disciplines such as biology. In the areas of English and language arts curriculum, the very idea of narrowing the use of language to the writing and reading of authoritative ‘self-identical’ meanings is problematic. Even in arithmetic, where the meaning of ‘ $5+2=7$ ’ is rather well settled among mathematicians, it is by no means clear that the purpose of curriculum is achieved when students have acquired a secure knowledge of that ‘math fact’ as a positive proposition. In all these areas, we see the danger of curriculum providing students merely with a learning of positive silhouettes, rather than a knowledge of the multi-dimensional realities that are reductively projected, or ‘retrojected,’ onto the flat monochrome plane of the silhouette.

Curriculum is not a matter of learners acquiring discreet bits of positive meaning. Curriculum is the course of experience in which human formation takes place. Within that course of experience, young people encounter new ideas and new ways of using words within previously

unfamiliar discursive practices, such as the practical discourses of mathematics, science, literature, history, and other disciplines of understanding. When people first encounter such specialized disciplines as previously unfamiliar discourses, they must make sense of these new discourses in relation to the discursive capabilities with which they come previously equipped. There is a need to extend their previously familiar discourse and, at the same time, to differentiate the new discourse.

Hence, the question of accounting for differences among discourses is one of great importance for curriculum, and not just a matter for speculation by philosophers or literary theorists such as Quine and Hirsch. Resources to account for such differences are provided by the structuralist semiology derived from the work of the Swiss linguist, Ferdinand de Saussure. As one example, in my paper on ‘Cognition as a semiotic process: from situated mediation to critical reflective transcendence,’ structural analysis is used to show how problems resulted for students whose customary use of the term ‘motivation’ occurred within moralizing discourses of personal self-discipline, and for whom this usage interfered with learning about ‘motivation’ in the discourse of behavioral psychology (Whitson 1997: 118-125).

Ultimately, we will see that structural semiology does not provide the alternative that is needed to displace positivist ideology. In my treatment of the ‘motivation’ example, analytical resources from structural semiology were used within the broader semiotic approach derived from the tradition of C. S. Peirce, which does provide (as we shall see) the fundamentally non-positivist approach that will be needed to supplant the practices of education à *la silhouette*. The relationship between Peircean and Saussurean approaches can be considered later, after both approaches have been introduced. Although Saussure’s approach is not the ultimate solution, it does lead to important insights for curriculum, and it provides a helpful first step toward envisioning a non-positivist alternative.

### 3.1. *Saussure*

In his Course on General Linguistics, Saussure’s students were taught<sup>2</sup> that in *la langue* (i.e., in the language as a perduring structured system, versus in *la parole*, i.e., in uses of the language in transpiring speech-events):

Il n’y a que des différences; pas le moindre terme positif. ....

Il n’y a point d’idées positives données ...

(There are nothing but differences; not the least positive terms. ...)

At no point are there positive ideas given ... [or positive given ideas] (Saussure 1989 [1907-1916]: 271)

Just as, in English, ‘the data’ means ‘the given,’ so too in French ‘les données’ is both ‘the data’ and ‘the given.’ We recall how Carnap’s project begins with a ‘reduction of reality to the given,’ and attempts to construct all knowledge from the sense (or *Sinn*) construed as something positive. We can see now the continuity of this positivist project with Hobbes’s idea of sense as originating in positively given sense-impressions, and proceeding thence to names, combinations of names, and then to propositions.

The continuity of this positivist project is thrown into dramatic contrast by the Saussurean alternative view, which sees how sense or meaning is established on the basis of structured systems of differences, ‘without positive terms’:

... in the language [*la langue*] ... there are only differences. Difference implies to our mind two positive terms between which the difference is established. But the

paradox is that: In the language, there are only differences, without positive terms. ...

Strictly speaking there are no signs but differences between signs. (Saussure 1993 [1911]: 141)

‘The ultimate law of language,’ as Saussure explains,

is ... that nothing can ever reside in a single term. ... [that] *a* cannot designate anything without the aid of *b* and vice versa, or, in other words, that both have value only by the differences between them, or that neither has value, in any of its constituents (I suppose ‘the root,’ etc.), except through this same network of forever negative differences. (Saussure 1954 [1909]: 63; Culler 1986: 64)

The key to linguistic meaning, as Saussure explains it, is in how signs function in the relationship between structures of phonemic difference and structures of conceptual difference. He proposed a science of ‘semiology’ that would study language along with analogous systems of non-linguistic signs (rituals, customs, gestures, etc.). Thibault (1997) provides a careful and extensive treatment of the basic principles, and implications for social theory. Briefer explanations, with examples in education, may be found in Whitson (1997, 1991a). Here, one quick example of the basic principles should be enough for us to move on to implications for curriculum:

How is this sentence meaningful: ‘The cat saw a mouse.’? Saussure would explain that it is not a matter of each word having positive meaning on its own. Within the language, the meaning of ‘saw’ is established partly by the difference between ‘see’ and ‘saw.’ There is the phonemic difference between the vowel sounds that we spell ‘ee’ and ‘aw’; and there is the conceptual difference between present and past tenses. The system of differences in the phonemic structure, together with the system of differences in the structure of ideas, supports the unity of differentiated sounds and ideas in linguistic signs like the words ‘see’ and ‘saw.’

To consider the significance of meaning within alternative discourses, it will also be helpful to note the differentiation between ‘syntagmatic’ and ‘paradigmatic’ dimensions in semiology. ‘See,’ ‘saw,’ and ‘sees’ are structural alternatives on the paradigmatic dimension. ‘The cat sees a mouse’ and ‘the cat saw a mouse’ are sentences with different meanings, depending on which of those paradigmatic alternatives occurs in the position of the sentence predicate. The words ‘cat,’ ‘sees,’ and ‘mouse’ occur together here in the same sentence, with the sentence meaning determined by the place of each word within the syntagmatic structure of the sentence, which is determined by word order in English, and by other syntactic devices in other languages.

To generalize these concepts: hat, coat, shirt, pants, shoes and socks may be worn together in a ‘syntagmatic’ relationship. Shoes and socks are not paradigmatic alternatives. Boots and sandals are, however, paradigmatic alternatives. It will be one or the other: in ordinary structured practice, no one would wear both boots and sandals on their feet at the same time.

We can extend this Saussurean principle for application at another level, to help see how alternative discourses may or may not be paradigmatically opposed to each other. Consider the two discourses noted above, in which the word ‘motivation’ was used in different senses (Whitson 1997: 118-125). In this case, college undergraduates were reading a textbook chapter on the behavioral psychology of ‘motivation,’ which dealt with variables affecting such things as physiological arousal. For some students, their own customary use of ‘motivation’ as a moral term (as in ‘You’re going to flunk out because you’re lazy and you don’t have enough motivation and self-discipline.’) interfered with their ability to understand what ‘motivation’ meant within the discourse of their textbook. While these may be considered alternative discourses on motivation, this does not mean that they are always or necessarily opposed to each other paradigmatically as mutually exclusive systems of thinking or belief. Someone could use one of

these discourses in some contexts and for some purposes, without compromising their ability to use the other discourse in other contexts and for other purposes. The problems, confusions, and misunderstandings result from the lack of awareness of different discourses in which ‘motivation’ takes on different meanings; and this lack of awareness can result from a more general idea of language as consisting of words having positive meanings in themselves.

### 3.2. *Meaning within discourses*

Consider this example, from a book produced for Madeline Hunter’s program for in-service training (teachers spoke of being ‘Hunterized’) of elementary and secondary school teachers that was very widely used and influential in the 1980’s:

Have your students explain why cucumbers and okra could legitimately be served in an all fruit salad. Such a question would surely focus them on consideration of the critical attribute that determines whether something is a fruit or a vegetable ... (Hunter and Hunter 2004: 41; cf. Hunter 1982: 28)

Hunter’s focus is on the pedagogical use of ‘anticipatory set’; but the pedagogical techniques and strategies that she is teaching are betrayed by the implicit ideology of knowledge and learning that is evident in this example. Presumably, okra and cucumbers are correctly defined as ‘fruits’—and as ‘not vegetables’—on the basis of a (positive) critical attribute; and on this basis, it would be ‘legitimate’ to serve okra and cucumbers in a fruit salad.

Recalling Minick’s observations discussed earlier, we again see an example in which students could satisfy the requirements of this lesson only if they succeed in putting out of their minds any reference to the ‘situational sense’ of making, serving, or eating a fruit salad in everyday life outside of the school classroom. (Even in the school cafeteria, okra would not be served in a fruit salad!) To succeed, the students first must accept the terms of a curriculum in which words have correct positive meanings, on the authority of teachers, textbooks, and dictionaries. Not only are word meanings correct or incorrect, but the ingredients in a salad are legitimate or illegitimate, based on a kind of authority students learn to recognize and to deal with as the basis for being successful or unsuccessful in their school careers.

By any real-world standard, of course, the content of Hunter’s illustrative lesson is not only foolish, it is simply wrong. In the real world, okra and cucumbers are not served in fruit salads with the peaches and bananas. In culinary discourse, okra and cucumbers are served as vegetables, rather than as fruit. The categories formed by semantic differentiation between ‘fruits’ and ‘vegetables’ operate this way in culinary discourse, but they do not occur at all in a botanical discourse, where if something is a ‘fruit,’ that does not mean it is not a ‘vegetable.’

The classification behind Hunter’s definition is not correct in any discourse—culinary or botanical. The problem is that she is understanding (and teaching) meanings as positivities somehow belonging to the words, just as the ‘critical attributes’ are thought of as belonging to the things named by those words. To teach meanings in this way is to teach the broader idea that meaning, in general, is just this sort of positive affair. Meaning is not understood here as a matter of language use, and of language used within the structured fields of semantic differences that make discursive practice intelligibly meaningful.

Two points may be appropriate here to clarify the significance of this example. First, this is not chosen as a particularly ridiculous example that I am stretching to exploit. For one thing, the vast influence of Hunter’s program, and its widely perceived credibility in education, should not be underestimated (cf. Garman and Hazi 1988; Mandeville and Rivers 1988; Ramsay 1990; Sardo-Brown 1990; Slavin 1987). More important, I believe that this is just one conveniently clear example of the positivist ideology of meaning that is pervasive in the schools, with or without Hunter’s own particular influence.

The other point to clarify is that what's important to see here, for our purposes, is not the simple incorrectness of the content taught in this example. As with the incorrect definition of 'due process' in the Delaware state standards, this 'wrong answer' is an unfortunate mistake, but one that could be corrected easily and simply by replacing it with some correct information. I am not trying to make a big deal out of a rather trivial mistake. What is not trivial, and what this example can help us learn to recognize, is the more general ideology of positive meaning that conditions the curriculum, and the quality of learning that such curriculum supports.

Any systematic positivist thinker with a degree of self-awareness—whether Hobbes or Carnap or even E.D. Hirsch—would have no difficulty coming up with positivistic explanations for how words like 'fruit' or 'motivation' can have different meanings when they are used in different discourses of the kinds we have observed, such as the behavioral or moral discourses for 'motivation,' or the culinary or botanical discourses for 'fruit.' Making a somewhat different, but not altogether unrelated point, John Locke himself argued that since 'words at best are faint Representations, being not so much as the true Shadows of Things, and are much sooner forgotten,' students will learn better through 'Familiarity of Discourse' between a teacher and the student, who 'will then begin to value Knowledge when he sees, that it inables him to Discourse,' and to learn in a way that 'lets things into the Mind, which stick there, and retain their Evidence with them' (Locke 1989 [1695]: 161). For systematic positivist thought, the dependence of word meaning on actual discourse is not a problem. There is a serious problem in education, however, when school curriculum is based on the presuppositions of an implicit positivist ideology, without the consciousness of logical assumptions that compels a rigorous philosopher like Carnap to qualify his system, with explicit recognition of its limitation to a restricted range of formalized discourses.

As we saw in the case of 'motivation,' the alternative discourses in which 'fruit' has different meaning (with okra being a fruit in the botanical discourse, but a vegetable, and not a fruit, in culinary discourse) are not paradigmatically opposed to each other as mutually exclusive systems of belief or discursive practice. Someone who learns to use 'fruit' in its proper botanical sense can still use the word appropriately, in the culinary sense, when talking about what to put in a fruit salad. These uses are not in conflict with each other, when they are deployed appropriately, each in its own context. In a curriculum that fosters real literacy, students will not only learn how 'fruit' is defined technically, in botany; they will also learn to understand and recognize how word meaning is embedded in a variety of different discourses. An implicit ideology of positive word meanings, which obstructs recognition of the role of differences and discourses, prevents curriculum from fostering real literacy.

### 3.3. *From Discourses to Dialectics*

We have seen examples of alternative discourses that are not in paradigmatic opposition to each other. Sometimes alternative discourses are opposed to each other as mutually exclusive paradigmatic alternatives. Hobbes's discourse of positive verbal meaning, and Saussure's discourse of differential semiologic meaning, are mutually exclusive, paradigmatically opposed discourses in this sense. They do contradict each other, and the validity of one precludes validity of the other discourse.

In Saussure's view, intelligibility is founded upon differences. For Hobbes, it's based on positivities. This dialectical opposition sets up the possibility of an ironic thought experiment. I put it to readers of this paper to judge for themselves, but here is what I suspect:

Since this paper is written for publication in *Semiotica*, many readers will have had prior familiarity with Saussure. Since it is written for a special issue on education, there will also (hopefully) be readers who were not previously familiar with Saussure's semiology. If my experimental hypothesis is correct, it would confirm Saussure, and disconfirm Hobbes. What I

hypothesize is this: For readers without previous knowledge of semiology, I hypothetically predict that the introduction of Saussure's alternative discourse will suddenly make the meaning of 'positivity' a whole lot more understandable than it was throughout all the preceding pages of examples, explanations, definitions, and rationales. Readers already familiar with semiology could have understood 'positivity,' from the beginning of the paper, by contrast with Saussure's alternative. If Saussure is right, the meaning of 'positivity' will have semantic value by virtue of how it differs from alternatives. If Hobbes is right, the idea of 'positivity' should itself be intelligible as a positive idea, without the need for contrasting alternatives. I leave this up to readers' judgment.

Be that as it may, structural semiology does provide analytical resources that can be used to trace out the semantic differences between alternative discourses, including discourses that actually do stand in paradigmatic opposition to each other. Structural analysis of opinions written by justices of the United States Supreme Court reveals, for example, that in cases arising from conflicts over school curriculum, when the justices appeared to be using the same terminology in their arguments about 'the freedom of speech,' as protected by the First Amendment to the U.S. Constitution, they actually meant different things even when using the same words, depending on whether they were writing from within what I have called the 'discourse of expression' (which turns decisively on whether individuals have been obstructed from expressing what is in their minds) or the 'discourse of action' (which turns instead on the freedom of agency with which people are autonomous in the making up of their own minds) (Whitson 1991a: 157-209).

It might appear that this example involves discourse about curriculum, rather than the discursive practice of curriculum itself, as experienced by students in the schools. Even if that were the case, the example would still be germane to our discussion here. I would suggest, however, that even in the discursive practice of curriculum itself, when students are learning about constitutional protection for free speech and other individual rights within the U.S. system of government, real understanding of 'the freedom of speech'—just like real understanding of 'the due process of law'—actually requires that students learn to recognize the conflicting senses in which these phrases are construed by judges, lawyers, politicians, citizens, and others who are interpreting them within different discourses of understanding. This does not require that students must be burdened with a knowledge of Saussurean semiology or structural semantics, but it does require that students understand how legal meaning develops within conflicting social, historical, and legal discourses (just like 'fruit' has different meaning within alternative—but not necessarily conflicting—discourses), rather than the students being served with mere silhouettes of knowledge (whether correct or incorrect), such as the definition of 'due process' as meaning that 'government must follow its own rules.'

When the Court must decide a First Amendment case one way or the other, the discourses of action and expression come into mutually exclusive, paradigmatic opposition to each other. To construe 'the freedom of speech' within one of those discourses is to preclude construing it in terms of the other discourse. To understand the basic conflict, one must see how the meaning of each discourse becomes a function of the difference that it makes in dialectical opposition to the other. Of course, the Court would not be limited to just these two discourses, which were discovered running through opinions in the particular cases analyzed in Whitson (1991a): there could be yet a third alternative, or some kind of Hegelian *Aufhebung* (sublation, or 'synthesis'). In any case, we are confronted with discourse that cannot be really understood without an understanding of how the discourse, and the terms within that discourse, differ in their meaning from a dialectically opposed alternative.

In a chapter on the case of *Scopes v. Tennessee*, the famous 1927 'monkey trial' in which a school teacher was convicted under a Tennessee law which made it a crime to teach about evolution in the state's public schools, Richard Weaver used the case to demonstrate the crucial importance of understanding the dialectical relationships among discourses (Weaver 1985 [1953]: 27-54). Again, his arguments apply on different levels: His critical analysis of the arguments in

court pertain to legal and broader public discourse about curriculum and about the governance of education; but he proceeds to the conclusion that the problems on that level demonstrate the need for all educated people to be educated in a way that brings them to the capability to understand and critically evaluate dialectical alternatives (54).

Weaver distinguishes among the ‘dialectical,’ ‘rhetorical,’ and ‘positive’: Dialectics deals with logical possibilities: e.g., the meanings of discourses in terms of how they might be mutually contradictory, and how they might be compatible with each other; rhetoric shows relationships between the dialectically secured possibilities and the world of prudential conduct; and ‘positive positions, like the “position” that water freezes at 32°F., are not matters for rhetorical appeal’ (27). Weaver faults the arguments used to defend the teacher for the way those arguments attempted to reduce the trial to a conflict over the positive factuality of evolution. For Weaver, as a dialectical matter, even if the facts of evolution could be proven as a positive position, this would not conflict with the state legislature’s practical legal action (and the rhetorical discourses supporting that action) in prohibiting the teaching of evolution.

In the most recent U.S. Supreme Court case on teaching evolution, we see a failure to recognize the significance of how terms have their meaning by virtue of their use within their respective discourses. In *Edwards v. Aguillard* (1987), the Supreme Court declared unconstitutional a state law in Louisiana which required that, if evolution is taught, then ‘balanced treatment’ must be accorded to the teaching of ‘creation science.’ In the law passed by the Louisiana legislature, ‘The theories of evolution and creation science are statutorily defined as “the scientific evidences for [creation or evolution] and inferences from those scientific evidences”’ (482 U.S. 578, at p. 581). The Supreme Court struck down the law on the basis of the evidence they found in the legislative history from which they inferred that the legislation had been motivated by an unconstitutional religious purpose.

In a dissenting opinion, defending the constitutionality of the ‘balanced treatment’ law, Justice Scalia argued that the Supreme Court did not have sufficient basis for its conclusions about motivation, but that such motivation would not be a valid basis for striking down the law in any case. The Louisiana legislators and Attorney General insisted that the purpose of the law—as declared explicitly within the law itself—was to promote ‘academic freedom’ for the students to decide for themselves which scientific theory to believe, after they had been given a ‘balanced’ presentation of the ‘evidences’ for both scientific theories. In his defense of the statute, Scalia himself adds emphasis to this phrase in the definition:

To begin with, the statute itself *defines* ‘creation-science’ as ‘the *scientific evidences* for creation and inferences from those *scientific evidences*.’  
§17:286.3(2) (emphasis added). (482 U.S., at 611)

Relying on the motivation-based rationale for its decision, the Supreme Court majority took no notice of the basic problem betrayed by use of the word ‘evidences’ throughout the legislative history, the litigation, and the text of the law itself. But, properly speaking, there is no such thing as ‘scientific evidences.’ Science does not deal with ‘evidences’; and there is no such word as ‘evidences’ in the language of scientific discourse. Grammatically speaking, ‘evidence’ in science is a mass noun, not a count noun (as in *17 Evidences against Evolution* (Martin no date)). Scientists don’t talk about finding new or more ‘scientific evidences’ for their theories, or about the need to find more supporting ‘evidences’ to prove a theory.

‘Evidences’ is recognizable as a term within religious discourse, as in the *Oxford English Dictionary*’s examples under ‘*Evidences of Christianity, of the Christian Religion*, or simply *The Evidences*,’ including the title of William Paley’s influential *Evidences of Christianity* (1794), and J.S. Mill’s *On Liberty*, where he is quoted saying, ‘There is no reasonable objection to examining an atheist in the evidences of Christianity.’ The lawyers and judges who were arguing against the constitutionality of Louisiana’s ‘balanced treatment’ law argued that ‘creation science’ is really a religious teaching, and not really science at all. If they had taken note of this

problematic use of the word ‘evidences,’ they could have used this to support their conclusion that the law violated the Constitution’s prohibition against state support for religious teaching.

Apart from the constitutional issue concerning state support for religious teaching, however, this matter of ‘evidences’ has a different kind of significance for purposes of curriculum practice that provides students with real science education, and not just a silhouette of knowledge about science. The way ‘evidences’ gets used as a count noun gives a false idea of what *evidence* in science really *is*. One draft of the ‘balanced treatment law’ defined ‘creation-science’ as including

the scientific evidences and related inferences that indicate (a) sudden creation of the universe, energy, and life from nothing; (b) the insufficiency of mutation and natural selection in bringing about development of all living kinds from a single organism; (c) changes only within fixed limits or originally created kinds of plants and animals; (d) separate ancestry for man and apes; (e) explanation of the earth’s geology by catastrophism, including the occurrence of a worldwide flood; and (f) a relatively recent inception of the earth and living kinds. (*Edwards v. Aguillard*: 600-601)

Implicit in this language is the idea that there are scientific methods and procedures by which findings are produced as ‘evidences.’ Theoretical disputes in science are seen as a contest in which conflicting theories (such as the ‘theories’ of creation and evolution) can be evaluated in terms of which set of positive fact claims is supported better by the scientifically established positive ‘evidences.’

Real science, however, is not conducted on the basis of positive findings that have been established scientifically as ‘evidences,’ waiting to be applied in favor of or against the positive fact claims of competing theories. Findings and observations take on evidentiary value within a logic of scientific inquiry that does not work that way. How scientific inquiry does work, and how some findings and observations come to have evidentiary significance within the discursive practices of scientific inquiry, is a large part of what students need to learn in science education. Science education is not just the acquisition of positive facts or conclusions, and even more emphatically, science itself cannot be understood as just a matter of settling on positive beliefs that can be supported by the right kind of positive procedures.

Another telltale sign of the incommensurable discourses operating here could be seen in the use of the word ‘kinds,’ which also recurs throughout the legislative history, the litigation, and the judicial opinions (see, for example, ‘living kinds,’ and ‘originally created kinds of plants and animals’ in the definition quoted above). Again, this was not noted by the justices of the U.S. Supreme Court. There is one footnote (482 U.S., at 604, n.4) in which the Court’s majority opinion quotes a 1982 district court opinion (*McLean v. Arkansas Board of Education* 1982) in which the word ‘kinds’ is enclosed within quotation marks, but there is no indication of the Supreme Court justices being aware of what the *McLean* opinion signified by this notation.

In *McLean*, the trial court judge (who, unlike appellate judges on the Supreme Court, actually heard the testimony given by the witnesses in court) notes that the Arkansas statute that was being challenged in that case ‘utilizes the term “kinds” which all scientists said is not a word of science and has no fixed meaning’ (*McLean* 1982: 1257), and adds:

Section 4(a)(3) which describes ‘changes only within fixed limits of originally created kinds of plants and animals’ fails to conform to the essential characteristics of science for several reasons. First, there is no scientific definition of ‘kinds’ and none of the witnesses was able to point to any scientific authority which recognized the term or knew how many ‘kinds’ existed. One defense witness suggested there may be 100 to 10,000 different ‘kinds’. Another believes there were ‘about 10,000, give or take a few thousand.’ Second, the

assertion appears to be an effort to establish outer limits of changes within species. There is no scientific explanation for these limits which is guided by natural law and the limitations, whatever they are, cannot be explained by natural law. (1267-1268)

The Supreme Court justices, on both sides, unwittingly acquiesced in usage that treats ‘kinds’ and ‘species’ as if they were interchangeable terms that both refer indifferently to the same things in the natural world. We may recognize the positivity of meaning that is tacitly presupposed in their discursive practice by recalling how, for Carnap or for Hirsch, the positive propositional meaning of ‘five plus two equals seven’ is identically the same, whether the words are written in blue, black, or green ink, or whether the proposition is expressed in words spelled out in roman letters, or in Arabic numerals, or even in Chinese. As an abstract proposition,  $5+2=7$  is identically the same as 五+二=七. In like manner, we see ‘kinds’ and ‘species’ used by judges and lawyers as if their meaning is the same—which would be a crucial mistake for teachers or for students in the science curriculum.

‘Kinds’ is the Teutonic-English word used in the King James Version and other translations for the Hebrew word *miḥn* (מִיֵּן) in the book of Genesis. Over the centuries, the word was commonly translated as *génos* (γένος) in Greek and *genus* in Latin. It would be a mistake, however, to identify the meaning of the word *genus* in the Latin Vulgate translation of Genesis with the meaning of the word *genus* in the natural science disciplines of biology today. Those who read the book of Genesis against the background of Greek philosophy (for example, during the Aristotelian ascendancy of the Scholastic period) are likely to have understood the idea of ‘kinds’ along the lines of Aristotle’s highly developed theory of natural kinds, essences, etc. (Charles 2002: esp. 310-347). But Hobbes’s fiercely anti-Aristotelian nominalism was informed by a very different reading of the Hebrew Bible (Coleman 2004).

It seems relatively safe to treat the ancient Latin and Greek *genus* and *génos* as equivalent, but the relationship among these terms and the Hebrew *miḥn* and English ‘kinds’ is problematic. In any event, it is clear that the words ‘genus’ and ‘species,’ as technical terms in the natural science disciplines, are distinct and different from all of these. This is far from pedantic nit-picking: An understanding of scientific terminology, and the logic that makes scientific terminology meaningful within the distinctive discursive practices of scientific inquiry, is at the heart of science education. Anyone who hasn’t learned what ‘species’ means in scientific discourse, and could not tell how that meaning is different from what the words ‘species’ or ‘kind’ mean in other discourses, has not attained real scientific literacy.

Justice Scalia refers to ‘the subject of origins’ (Edwards 1987: 629). There is a choice that could be made in the curriculum between the subject of origins, and the natural science subject of biology; and this is a paradigmatic choice. The differences between these subjects, discourses, and inquiries may be considered dialectically. Of course, the discourses of natural science inquiry and theological or scriptural inquiry are not mutually exclusive within the life of any individual person or social community. Darwin himself tells us in his Autobiography, for example:

In order to pass the B.A. examination, it was also necessary to get up Paley’s ‘Evidences of Christianity,’ and his ‘Moral Philosophy.’ This was done in a thorough manner, and I am convinced that I could have written out the whole of the ‘Evidences’ with perfect correctness, but not of course in the clear language of Paley. The logic of this book and, as I may add, of his ‘Natural Theology,’ gave me as much delight as did Euclid. The careful study of these works, without attempting to learn any part by rote, was the only part of the academical course which, as I then felt and as I still believe, was of the least use to me in the education of my mind. I did not at that time trouble myself about Paley’s premises; and taking these on trust, I was charmed and convinced by the long line of argumentation. (Darwin 1905 [1876]: 40-41)

And yet, the word ‘evidences’ does not occur in Darwin’s *Origin of Species* (Darwin 1999 [1872])—a book of natural science.

Arguing for a semiotic, as opposed to a ‘semantical’ approach to curriculum, Schwab notes that curriculum must provide students with opportunities for learning how to deal with the problems of ‘participative rhetoric and dialectic—problems of discovering [a text’s] terms and subject limitation and of apprehending the function of such terms as instruments of enquiry’ (Schwab 1978 [1958]: 158). As Schwab explains the problem for curriculum,

They [the students] have been exposed to knowledge as if it were [positive] information, objectively given [positive] facts, passively noted by an investigator and passed on through discourse to a reader. Consequently, the process of initiating the student into participative rhetorical and dialectical interpretation must also be a process of initiating him into the existence of enquiry, of exhibiting to him the extent to which organized knowledge depends on terms chosen and subjects defined, and of showing him how he can identify these terms and definitions and trace their effects upon the knowledge which embodies them. (ibid.; my insertions)

#### **4. Curriculum Re-populated: Beyond the ‘prison-house’ of representation**

Beyond the points Schwab makes about discourse, dialectics, interpretation, and inquiry, which pertain directly to issues addressed in the section above, a striking difference between Schwab and the others we have seen so far who have written on curriculum (e.g. Hirsch and the Supreme Court justices) is that Schwab sees curriculum as an activity of human beings, rather than as some organized body of material to be learned. In this, Schwab is more in line with the community and the tradition of curriculum scholarship and practice. Schwab was himself involved in curriculum practice over many years in development projects and classroom practice at the University of Chicago, where Dewey’s influence (and through him, that of Peirce) was very much alive.

From the beginning of Curriculum Studies as a field of scholarship, ‘curriculum’ has been understood as the course of experience in which human being comes to form (Whitson 2006). Planned sequences of courses or course topics play a part in the curriculum of a student or an institution, but that is no more than one facet of the lived curriculum. From the Curriculum Studies point of view, it is obvious that curriculum is not just a matter of organizing, and ‘delivering’ or ‘implementing’ sequenced selections of facts, ideas, skills, and values as positive ‘contents’ to be learned. But curriculum is reduced to ‘contents’ of this kind in positivist programs, such as the ‘Core Knowledge’ program of E.D. Hirsch, with all his published lists and dictionaries of ‘what every American needs to know,’ ‘what your child needs to know,’ and what your ‘kindergartner,’ ‘first-grader’ ... ‘sixth grader’ needs to know, etc. (The Core Knowledge Foundation 2006b).

This view of curriculum as a mass of organized ‘contents,’ without regard for the actual course of (trans-)formative human experience, appears plausible—even common sense—against the background of core positivist assumptions about meaning and authority, which operate at large in the implicit ideology of common education practices and discourses about education. This is why I believe that it is necessary to bring those implicit positivist assumptions into the light of consciousness and criticism; for they will hold us powerfully within their influence until we see clear to abandon them, and to replace them with a framework for a more realistic understanding of curriculum.

Semiology can help us become aware of positivist assumptions by giving us a standpoint from which to view the assumptions of Hobbes and Hirsch more critically. While semiology provides a helpful advance in some respects, however, it ultimately falls into some of the same

traps as the more familiar positivism; and it does not provide us with the more realistic alternative that is needed for curriculum. For that, we need a *semiotically*—and not merely a *semiologically*—informed perspective.

Before we turn to semiotics, we will observe how the semiological perspective helps us begin to attain a non-positivistic understanding of the human beings engaged in the practice of curriculum. A first step will be to observe Saussure's view of *identity*, as formed within the co-related fields of differences, and of 'the notion of identity' as providing the necessary basis for the *entities* that can be observed and analyzed by linguists and semiologists. When this notion of identity is considered in relation to Hirsch's views on the 'self-identity' of meaning, as well as the discussions of identity and difference in the work of Hobbes, Locke, and Carnap, we can see how Saussure's semiology remains essentially, along with positivism, within what Leibniz called the 'way of ideas,' as contrasted with the 'way of signs' informed by semiotics (Deely 2001: 695). Despite its limitations, however, we shall see how the semiological tradition helps us get beyond the implicit positivist view of human beings, in which notions of self-identity extend from the self-identity of meanings to the self-identity of objects, including self-identity of human 'learners.'

#### 4.1. *Representation and identity in the 'way of ideas'*

Saussure's semiology, with its direct and explicit attention to issues of positivity and difference in accounting for how sounds (within structures of differentiated sounds) can be invested with semantic values (from co-related structures of differentiated ideas), provides a helpful step in casting positivist assumptions into visible relief, and helping us begin to imagine how things might actually be otherwise than the positivist account holds them to be.

Ultimately, however, semiology does not provide the resources we need for curriculum understanding and practice. For that, we need semiotics, which seeks a comprehensive view of semiosis, or the world-constituting action of signs—but with 'signs' understood as something far different, more general and fundamental than what Saussure described as *le signe* in his linguistics and his semiology. It is crucially important to understand that semiotics and semiology are not about the same thing. Signs, as understood in semiotics, are not the same things as *les signes* described in semiology (cf. Deely 2003). Only confusion and misunderstanding can result when people try to understand these as the same thing, just defined differently by two different traditions. To avoid such confusion and misunderstanding, Saussure's semiological *signe* will be referred to henceforth in this paper using the French word, without translation (as in *le signe sémiologique*), and the word 'sign' will be used in reference to signs as understood semiotically, within the long, deep, rich tradition of thinking about signs that runs from Augustine through Duns Scotus, Peirce, and Peirce (Deely 2001, 2004).

Deely notes that 'Semiotics and semiology have only two possible relations: that of a whole to a part, or that of postmodernity to modernity (Deely 2003: 38). I am persuaded by Deely's impressive demonstration of the postmodernity/modernity relation (Deely 2001); but in this paper I am more interested in what semiology contributes as a part, in relation to the more comprehensive semiotic understanding. Although not all semioticians would agree, I believe that Saussure's principles do have a valid but restricted role to play within a broader semiotic theory. For one thing, semiology helps us understand how meaning is established on a different basis than the positivist account. I also believe that *les signes sémiologiques* do actually participate as elements within triadic semiosis. My analyses in Whitson (1991a) and in Whitson (1997) also demonstrate the value of semiology for analysis of semantic codes by which meaning is constructed within discourses (cf. Deely 2001: 687 n. 33; 725-726).

Despite the differences, as I see them, between semiology and positivism, semiology remains squarely within 'what Leibniz summarily and accurately characterized as the way of

ideas' (Deely 2001: 695). As contrasted with 'the way of signs,' the 'way of ideas' supposes that signification can be reduced to mere representation:

Signification: the constitution of the relation proper to signs. Representation: the standing of one thing[\*] for another, where 'the other' might not really be *other* but be rather *the same* thing in a mind-dependent relation of partial self-identity ... A representation can be of a thing by itself, but a sign must be of a thing by an other than itself. (Deely 2001: 695, \*fn. omitted)

Locke himself is very clear:

It [the word 'idea'] being that term, which, I think, serves best to stand for whatsoever is the object of the understanding when a man thinks; I have used it to express whatever is meant by phantasm, notion, species, or whatever it is which the mind can be employed about in thinking ... (Locke 1995 [1689]: Bk. 1 Ch. 1 Sec. 8)

For Locke, our ability to think and understand is strictly limited to understanding and thinking about *ideas*. For him, in thinking we do not engage with real things in the real world beyond merely our ideas. A good silhouette is, perhaps, the best that we can hope for. Deely, in his analysis of the contributions and limitations of semiology (2001: 669-688), demonstrates how semiology—even as developed by those following Saussure—remains just another 'variant of modern idealism,' which portrays 'the mind [as dealing] throughout only with the phantoms of its own construction' (Deely 2001: 677).

For Saussure, although *les signes* are not positive *genetically* (in the way that names, words, signs, and ideas are genetically positive for Hobbes, Locke, and Carnap), they end up functioning *effectively* as something positive:

The linguistic [or semiological] sign, the pairing of *signifiant* [phonic, graphic, etc.] and [mental] *signifié*, is indeed something 'positive in its own class' (Saussure 1959 [1907-1916]: 120). ... The pairing is what constitutes the linguistic (or any semiological) system as such, but the relations among the elements alone hold each element together as a positive unity. (Deely 2001: 676-677; italics added)

Saussure explains that positive meaning is not to be found in individual words or *signes*, but in the total system of structured differences:

*Aucun signe n'est donc limité dans la somme d'idées positives qu'il est au même moment appelé à concentrer en lui seul; il n'est jamais limité que négativement, par la présence simultanée d'autres signes; et il est donc vain de chercher quelle est la somme des significations d'un mot.*<sup>3</sup> (Saussure 2002 [1907-1916]: 78)

On this basis, Saussure affirms the 'mind-dependent relation of partial self-identity' that Deely noted in the kind of representation implicated in the way of ideas:

Il n'y a point d'autre *identité* dans le domaine morphologique que l'identité d'une forme dans l'identité de ses emplois (ou l'identité d'une idée dans l'identité de sa représentation).<sup>4</sup> (30)

For semiology, this notion of *identity* provides the necessary fundamental basis for the kinds of *entités* that confront the linguist as eligible objects for linguistic investigation and analysis:

La notion d'identité sera, dans tous ces ordres, la base nécessaire, celle qui sert de base absolue: ce n'est que par elle et par rapport à elle qu'on arrive à déterminer ensuite les *entités* de chaque ordre, les termes premiers que le linguiste peut légitimement croire avoir en face de lui.<sup>5</sup> (33, original emphasis)

It is such entities that constitute *the data* (or in French, *les données*) for semiology. As we have just seen, such data are recognized as *positively given entities*, but not in the same manner as the positive sense-data, names, ideas, or logical terms of thinkers such as Hobbes, Locke, and Carnap.

The important problem of understanding difference and identity was recognized and discussed explicitly by Hobbes (1839 [1655]: 132-138), Locke (1995 [1689]: Bk. 2 Ch. 27), and Carnap (1969: 250-254), as well as by Saussure. To help us see how Saussure differs from the more classical forms of positivism, it is fortuitous that Carnap actually used the same example as one used by Saussure: the problem of ‘identity’ as represented in the statement ‘Today I came home on the same train as yesterday, namely, on the 6:12’ (Carnap 1969: 252), or when ‘we speak of the identity of two “8:25 p.m. Geneva-to-Paris” trains that leave at twenty-four hour intervals. We feel that it is the same train each day, yet everything—the locomotive, coaches, personnel—is probably different’ (Saussure 1959 [1907-1916]: 108).

Carnap offers two alternative ways of thinking about this:

According to the first approach, we are ... not concerned with identity, but with various other relations which, however, are envisaged as identity (either linguistically or conceptually). According to the second approach, we are not here concerned with similarity (in this or that respect), but with identity in the strict sense, however, not with identity between the individual objects which occur here, but between objects on a higher level (classes or relation extensions), of which the objects are representatives. (Carnap 1969: 252)

For Saussure:

... what makes the express is its hour of departure, its route, and *in general every circumstance that sets it apart from other trains*. Whenever the same conditions are fulfilled, *the same entities* are obtained. Still, the entities are not abstract since we cannot conceive of a ... train outside its material realization. (Saussure 1959 [1907-1916]: 109, emphasis added)

For Saussure, the 8:25 to Paris is ‘the same entity’ from one day to the next, even if the equipment and personnel are all *not* the same, by virtue of everything that sets the 8:25 to Paris apart from all the other trains—in other words, its identity within the structured system of different schedules for all the different trains and routes. For Saussure, the 8:25 is a *positive* entity, with the *positive self-identity* of its daily instantiations arising from what they have in common with each other, which is *essentially and distinctively* nothing other than their *negative differences* from all the other trains.

For Carnap, we can also speak of the 6:12 train home every day as having positive identity, in the strict sense, with the understanding that the identity pertains to the 6:12 *as a class*, which is represented by its daily instantiations; in this case, the class or ‘higher-level object’ for which ‘identity holds in the strict sense’ consists of ‘the arrangement to have a daily train at 6:12 P.M., as a class of train runs’ (Carnap 1969: 253). Here, the 6:12 is again a *positive* entity, but with its positive self-identity established on the basis of the positive characteristics that it possesses as a class. Carnap’s alternative—interpreting the statement as one that is actually ‘not concerned with identity, but with various other relations’—adds further emphasis to his insistence on observing the ‘strict sense’ of identity as such.

In a Hunteresque parody of this, I could ‘legitimately’ say that I had the same thing for lunch today and yesterday, if today I had a fruit salad of peaches, cherries, and bananas, and yesterday I had a ‘fruit salad’ of okra and cucumbers. This might seem like a ridiculous example, but it is at worst a parody of the schoolish positivist ideology of meaning that tacitly pervades curriculum, and undermines real understanding. Consider again the concept of ‘due process’: If the meaning of ‘due process’ is taught and tested as a dictionary definition, with the presupposition that ‘government following its own rules’ is the ‘critical attribute’ or positive

characteristic that underwrites the positive self-identity of this concept as a meaningful conceptual entity, then students will be ill-equipped to make sense of claims that due process was violated by the government of South Africa under Apartheid, or the governments of Alabama or Mississippi in the Jim Crow era, as long as those governments were ‘following their own rules.’

What we see in the case of positivist philosophers such as Hobbes and Carnap, and less philosophically-rooted positivist writers such as E. D. Hirsch, as well as less fundamentalist—but ultimately still positivistic—thinkers such as Saussure, is the determined effort to find some basis on which to found some system of positive identities, without which it is assumed there can be no basis for any meaning or authority. This is what we could expect, following Deely’s penetrating explication of what Leibniz designated as ‘the way of ideas,’ in which meaning and understanding are thought to be available through representation alone, without triadic signification as it is now understood in the semiotic tradition of C. S. Peirce (Deely 2001).

Our focus on meaning and authority, up to this point, has remained within the areas of concern addressed by the recognized traditions of legal and epistemological or methodological positivism. As we proceed in our concern with a ‘re-populated’ vision of curriculum, we need to extend beyond those traditionally recognized areas, and consider how the positivist concern for ‘self-identity’ is implicated in the ideologically presupposed ‘self-identity’ of curriculum participants, as well as the ‘self-identical’ meanings in curriculum ‘contents’ that they are supposed to teach and learn.

#### 4.2. *Self-identity of ‘learners’ and ‘learnings’ in positivistic constructivism*

We may recall that Hirsch’s discussion of ‘ $5+2=7$ ’ was expressly introduced to illustrate his explanation of what he understands to be the proper meaning of constructivism (Hirsch 1999: 134). Hunter was also illustrating her idea of constructivist pedagogy when she offered this as an illustration:

Take a look at the following ways in which teachers might present 200 feet in a meaningful way:

- For Hawaiian students, the teacher might say, ‘Suppose you rode your surfboard 200 feet.’
- For students in Colorado, a teacher might say, ‘Suppose you skied 200 feet down a slope.’
- For students in Iowa, a teacher might say, ‘Suppose you planted 200 feet of corn.’
- For football players, a teacher might say, ‘Suppose the gridiron were shortened to 200 feet.’ (Hunter and Hunter 2004: 127)

Hunter introduced this example to illustrate the application of principles explained in her earlier chapter on ‘Making Material Meaningful,’ which ‘stressed the importance of using experiences from students’ lives to illustrate the concept or generalization being taught,’ and that ‘meaning is not inherent in material. Rather, meaning exists in the relationship of that material to students’ own knowledge and past experience’ (ibid.). But if the word ‘fruit’ has an authoritative positive meaning, as including okra and cucumbers, on the basis of its own positive ‘critical attributes,’ how can the meaning of ‘200 feet’ be any less positive, or any more contingent on ‘students’ own knowledge and past experience’?

In Hunter’s discourse the words ‘fruit’ and ‘200 feet’ clearly do have their own positive correct meanings. In this sense, the ‘meaning’ of the word or concept is something different from what it takes to make the concept ‘meaningful’ to any student. Hunter’s positivist constructivism is, at bottom, no different from that of Hirsch: ‘200 feet,’ ‘fruit,’ and ‘ $5+2=7$ ’ are all things that

students need to know, and acquisition of these ‘learnings’ (in Hunter’s terminology) may require different processes for different ‘learners’ depending on their prior knowledge and experience; but once the knowledge is acquired, its essential content does not depend upon those variable processes.

The positivity of ‘learnings’ is exhibited in Hunter’s advice that ‘If the similarity will promote negative transfer, we should keep the two learnings separate. Don’t teach *latitude* and *longitude* on the same day’ (Hunter and Hunter 2004). To some, this might seem so ridiculous that it should not be used as an example of anything beyond itself. But this is just a relatively clear illustration of what’s wrong with teaching the meaning of ‘due process,’ for example, as the kind of ‘learning’ that could take the form of a dictionary definition (even if the definition is not incorrect), such that ‘due process’ and ‘equal protection’ might be taught on different days so that the two definitions would be kept apart in memory, without understanding both together as organic aspects of the overarching constitutionalization of civil rights and liberties protected by the Fourteenth Amendment in the aftermath of the U.S. Civil War.

The positivity of ‘learnings’ is not disturbed by accommodating the prior knowledge and experience of learners. Indeed, ‘learners’ themselves are being viewed as having their own positive self-identities (for example, as football-players, skiers, Hawaiian surfers, or Iowans [as an Iowan myself, having attended fifth through twelfth grades in that state, I must confess that ‘200 feet of corn’ would not have helped me the slightest bit]).

Consider these illustrations on another topic:

Notice your own reaction to the following examples: *this terrorist, those terrorists* versus *this book, those books*. [Note: ‘terrorists’ have now replaced the ‘rapists and communists’ who appeared in the 1982 version of this sentence].

Students’ attention can easily be diverted from the critical attribute being identified, and the students may become focused on feelings elicited by the example. At times, we may wish to imbue learning with emotional overtones; however, most of the time, emotions (with the exception of interest) can direct students’ attention away from the critical attribute the example was designed to teach.

... introducing the notion of legalized marijuana or legalized prostitution could shift a student's attention away from learning the discriminators that separate legal from illegal actions. It is better to use examples such as lobbying or cold medicines, which do not have such emotional overtones. (Hunter and Hunter 2004: 70)

Of course, it is sensible for teachers to avoid examples that will distract students counterproductively; but this sensible lesson should not distract *us* from the underlying positivist assumptions about how the positive meanings of intended learnings can be constructed more reliably by students when the learners’ positive identities are engaged, but engaged safely—without provocative distractions that might open up those positive identities to any risk of reinterpretation. Such instruction is careful to avoid disturbing what Lacan described as ‘the Imaginary order’ (discussed below), in which a student is psychologically and ideologically constituted—*imagistically*—*in the image* of a self-identical subject (e.g., [male] football player or [female] cheerleader) confronting a world of other (likewise ‘Imaginary’) subjects (e.g., farm boys, surfers, potheads, rapists, communists, terrorists, and prostitutes), as well as objects *imagistically* perceived as okra, cucumbers, bananas, or tomatoes.

The problem is not with this or that piece of advice on techniques for instruction: The problem, rather, lies in the more fundamental way of thinking about ‘learners’ and ‘learnings,’ and the idea that this is what education is all about. As Jean Lave puts the question:

But what is that ‘what’ that learners are learning? Facts? Knowledge? Skill? Yes, but perhaps that is not the most crucial way to characterize what is going on. We might not want to take the study of learning to be first and foremost the study of knowledge people are acquiring, though theories of learning have traditionally been based in epistemological analysis, in the philosophy of knowledge and knowing, hence on conceptions of the knowing, contemplating, (representing, problem solving ... ) person. In contrast, learning, viewed as socially situated activity, must be grounded in a social ontology that conceives of the person as an acting being, engaged in activity in the world. Learning is, in this purview, more basically a process of coming to *be*, of forging identities in activity in the world.

In short, learners are never only that, but are becoming certain sorts of subjects with certain ways of participating in the world. (Lave 1992)

Lave’s conception of learning as a social-ontological matter of ‘coming to be,’ and not just a cognitive matter of acquiring knowledge and skill, comports with how, in Curriculum Studies, curriculum is understood as the course of experience in which human being takes form. Of course, this includes (*as experienced*, and not just as presented in official documents) all the readings, lectures, class discussions, lab experiments, courses, tests and exams, etc. that figure into the scope and sequence of a person’s curriculum in school, but the person’s *curriculum vitae academicae* contributes to their personal formation—including the person’s cognitive formation—only as one among the multiple complexly interwoven threads of the full curriculum of that person’s life, or of their *curriculum vitae*, viewed comprehensively.

#### 4.3. *Psychoanalytic theory, and the eros of curriculum*

After considering a variety of positivistic discourses in and about curriculum, we began to see a ‘re-populated’ view of curriculum in the work of curriculum theorist and practitioner Joseph Schwab. The influence of Dewey and Peirce can be seen in Schwab’s work on topics such as reading, inquiry, and learning, but his writing on the erotic psychodynamics of student engagement in curriculum shows more of a Freudian influence (e.g. Schwab 1978 [1954]).

Freudian theory has contributed importantly to our understanding of curriculum (see, e.g., Pinar et al. 1995: 518-536). While Freudian theory is ‘semiotic’ in a number of ways, this paper will deal only briefly with relevant aspects of the work of Jacques Lacan, a theorist in the Freudian tradition who was also deeply influenced by Saussure, partly through the mediating influence of French structuralists such as Claude Lévi-Strauss. Lacan himself has also been influential in curriculum scholarship (see, e.g., Pinar et al. 1995: 476-480); but our interest in this paper will be limited to seeing, first, how Lacan (as a semiologist) helps us gain critical insight on the positivist discourses, and second how (as a semiologist) he himself remains trapped within the ‘prison-house’ of representation, which we can escape only with a semiotically-informed perspective on curriculum.

The first of these two points was previewed in the section above, where we noted how the positivity of self-identities presupposed in some curriculum discourses is indicative of Lacan’s ‘Imaginary’ order. To truly understand Lacan’s idea of ‘*l’Imaginaire*,’ as differentiated from yet mutually involved with the Symbolic and the Real, we would need to see how these terms are used within his discourse on the theory and the clinical practice of psychoanalysis. For purposes of this paper, a crude appropriation of the basic ideas will be enough to show how this development from the semiological tradition provides a useful prism for understanding positivity in this aspect of curriculum discourse.<sup>6</sup>

The Imaginary is (among other things) the realm of me versus you, and us versus them, in which the opposition between ideas, values, and other qualities that are ‘mine’ versus ‘yours,’ or

'ours' versus 'not ours' can be relied upon to tell us apart (cf. Justice Powell in *Pico*, quoted above). A sharp example may be seen in John Miller's 'Classroom Jihad' (Miller 2003). Miller quotes this conclusion from an American Textbook Council report on 'Islam and the Textbooks': 'On controversial subjects, world history textbooks make an effort to circumvent unsavory facts that might cast Islam past or present in anything but a positive light. Islamic achievements are reported with robust enthusiasm. When any dark side surfaces, textbooks run and hide' (Sewall 2003: 27).

Before we see what Miller does with this, we might do well to note that the word 'positive' is used here in a different sense from that of 'positivity' or 'positivism.' The report's conclusion is using 'positive' as opposed to 'negative,' along the lines of 'good' versus 'bad,' as in 'positive light' versus a 'dark side' or 'unsavory facts.' But 'positive' facts, in the sense of being *posita*, may be either good things or bad things, savory or unsavory. Bad things may be regarded as having positive existence and identity. This is particularly clear in attributions of 'evil' as a positivity: not merely as a lack, absence, or privation of good, nor as being 'evil' in some dialectical or otherwise relational sense, but in being positively evil.

After quoting the Textbook Council's report, Miller continues in his own opinion piece:

Take the concept of jihad .... Students reading [one seventh-grade textbook] receive a sanitized version of this reality. Jihad, according to this book, is merely a struggle 'to do one's best to resist temptation and overcome evil.' There's an element of truth in this definition, insofar as militant Islamists think anybody or anything not subscribing to their strict theology is 'evil.' But the book gives students no way of appreciating this larger context. To them, jihad must seem like a useful tool to suppress their urges to pass notes in class, run in the hallways, and stick chewing gum under their desks. (Miller 2003)

In the Imaginary of 'militant Islamists' this is presumably a confrontation of good versus evil, with them as the 'good' and everybody else as 'evil.' Miller apparently would have it taught the other way, with us good, and them evil. If the textbook presentation is one of jihad purely as an unalloyed striving for good, then this would equally appear as a phenomenon of the Imaginary order.

Instead of the Imaginary scene of individual or collective identities in confrontation with each other—positive entities as much alike internally as they are unlike the opposing entities—an alternative afforded by reflective understanding of the Symbolic order would be learning to see *difference* instead of only *opposition*, and to see conflicting differences among and within all of us, at both individual and collective levels. The meaning of 'jihad' itself is a matter for conflicting interpretations in the Islamic world, and within the lives of individuals. Students could understand this from first person accounts such as *Lipstick jihad: A memoir of growing up Iranian in America and American in Iran* by Azadeh Moaveni (2005). Textbooks could help students understand jihad more deeply and truthfully, if the textbooks are not dedicated to the consolidation of identities in the Imaginary order, as Miller seems to advocate.

The struggle that is jihad cannot escape involving struggle over the very meaning and reality of jihad itself. Some in the West seem unwilling to allow for such struggle—in some manner of agreement with the 'militant Islamists' who insist that jihad can be nothing other than what they claim that it is. For Muslims, such a position allows no option besides adherence to this notion of jihad, or an abandonment of jihad altogether, which may be difficult without substantial abandonment of core aspects of their faith and culture.

The monolithic solidity of identities within the Imaginary order, as established in the 'mirror stage,' is not conducive to change, growth, or development—possibilities opened up with the interruption of social culture, the discourse of the Other, and the Symbolic order. As refracted in these excerpts from dialogue in a children's book by Adam Gropnik (who does not appear to be Lacanian, although he did write the book in Paris):

... your reflection in a mirror and your reflection in a window may seem to be alike, but they are really as different as two things can be. Look into a window with desire, and some day you will become your longing. But look too long into a mirror—and you put your very soul at risk!

... what is ice but water turned crystal? ... Yet ice freezes where water feeds, and ice kills where water gives life. It is the same with windows and mirrors. In the mirror, all is frozen, ... Everything! (Gopnik 2005: 78-79)

Such desires, the longing to become what one is not yet, and the life-giving springs of discursive resources afforded in the (trans-)formative experience of curriculum, have been recognized in Lacanian and other psychoanalytic theorizing on curriculum:

... educational theorists who use Lacan as a starting point theorize student desires directed at the position of the teacher as a subject presumed to know [citations omitted]. Rather than desiring oneness with the person teaching, the student desires the relationship of oneness that the teacher is believed to have with the linguistic structures that inform the existence of both teacher and student. Driven by the oneness presumed between the teacher and language, the student seeks to overcome the linguistic gap, the feeling of incompleteness, from which his or her own desire springs. (Stillwaggon 2005)

It is the ‘informed existence of both teacher and student’ that is at stake in the curricular course of experience. The desire to become your longing is not fulfilled simply by acquiring positive facts and skills that leave self-identities of both the learnings and the learners intact and unchanged. Lacan extends Saussure’s structural semiology in ways that enable limited engagement with this problematic; but Lacan remains within the outer limits of the ‘way of ideas’ in its semiological development.

Saussure described semiology as concerned with one of three delimited domains. The third domain concerns ‘phonetics’: the ‘linguistic domain of pure sound or of that which serves as sign [*de signe*] considered in itself and outside of all relationship with thought.’ The second domain is the ‘linguistic domain of the *signe vocal* (*Semiology*): in which it is as useless to want to consider the idea outside of the sign [*hors du signe*] as the sign [*le signe*] outside of the idea. This domain is at once that of the *relative thought*, the *relative vocal figure*, and of the relation between these two.’ Along with these, Saussure describes the first domain as a ‘nonlinguistic domain of pure thought, or without vocal sign [*signe vocal*] and outside of the vocal sign [*signe vocal*], being composed of absolute quantities’ (Saussure 2002 [1907-1916]: 43-44, original emphasis, except in the bracketed French, which is included to maintain my observation of the difference between *le signe* in semiology and the sign in semiotics).<sup>7</sup>

Although Saussure saw *semiology* as applicable to a delimited domain that did not reach into the domain of ‘pure thought,’ Lacan adapted Saussure’s ideas of linguistic structure for his argument that even the unconscious itself is ‘structured like a language’ (see, e.g., Dor 1998). As Jameson has shown, however, even Lacan and the other more far-reaching followers of Saussure have remained trapped within what Nietzsche referred to as ‘the prison-house of language’ (Jameson 1972). Deely counts both Lacan and Jameson among those ‘who fancy themselves “postmodern”’ but who have not yet found their way out of the modernist ‘way of ideas’ (and mere representation) to the truly postmodern ‘way of signs’ (and signification) (Deely 2001: 611). For this, we need a consciousness that’s *semiotically* informed.

Semiology does enable us to see into differential structures by which ‘ideas’ may be articulated, which a cruder positivism does not enable us to see. A mirror image is far richer than a silhouette in color and detail; but it still falls awfully short of what we can begin to see by looking through the glass—through windows, lenses, prisms—to see the full depth, expanse, and

dimensionality of our worlds and selves. And, when we do that, we begin to see thought, persons, and communities no longer as separately self-identical positive entities.

## 5. Semiosis and Curriculum

Curriculum, from the learner's standpoint, ordinarily represents little more than an arrangement of subjects, a structure of socially prescribed knowledge, or a complex system of meanings which may or may not fall within his grasp. ... Sartre says that 'knowing is a moment of *praxis*,' opening into 'what has not yet been.'<sup>\*</sup> Preoccupied with priorities, purposes, programs of 'intended learning'<sup>\*</sup> and intended (or unintended) manipulation, we pay too little attention to the individual in quest of his own future, bent on surpassing what is merely 'given,' on breaking through the everyday. We are still too prone to dichotomize: to think of 'disciplines' or 'public traditions' or 'accumulated wisdom' or 'common culture' (individualization despite) as objectively existent, external to the knower—there to be discovered, mastered, learned. (Greene 1971: 253, original emphasis) (\*citing Cray 1969: 13)

Maxine Greene, one of the most prominent and respected curriculum scholars of recent decades, reiterates the need to understand curriculum as surpassing 'what is merely "given"'—i.e., the *data* or *posita*—and to undertake the praxis of 'opening into what has not yet been.'

At the same time, she acknowledges the gap between this vision, and what is represented as curriculum to learners. Indeed, the word 'curriculum' is often restricted in its usage by people in education, as well as the general public, to 'the arrangement of subjects [and] structure of socially prescribed knowledge,' or the 'programs of "intended learning"' that are explicitly established by schools, school districts, or political jurisdictions. The more expansive view of curriculum expressed here by Greene is widely shared by scholars in Curriculum Studies (Pinar et al. 1995); but people outside the field often have not had occasion to consider why it makes sense to recognize curriculum in this more inclusive sense.

### 5.1. *Opposition within the positivist hegemony*

Among those who may be unaware of the broader general conception of curriculum, there are some who might be expected to take issue with expressions such as Greene's. Two general objections might be expected from Hirsch, for example: First, Hirsch might be expected to object that the broader conception is just part of an ideological smokescreen to hide the efforts of education professors to neglect what he sees as the paramount need for a 'core curriculum' (with 'curriculum' understood in the restrictive sense of prescribed courses, facts, and topics), or—beyond neglect—even a commitment to remove all factual content from 'curriculum.' Hirsch pounds this theme like a continuous drumbeat throughout his book, *The schools we need and why we don't have them* (1999), in which he argues that 'schools are not organized, and their staffs are not trained, to reliably secure the spiritual and psychological well-being of students ... Schools are organized and instituted primarily to teach subject matters and skills, and it is their first duty to do so as effectively as possible.

Hirsch sees the primary responsibility of schools as one of imparting core factual knowledge, such as the propositional fact that  $5+2=7$  (and the positive meaning of that proposition), or the (positive) meaning of 'due process.' He argues that 'rote learning' of core knowledge is sometimes necessary (266-267), and at one point makes the accusatory claim that 'No professor at an American education school is going to advocate *pro-rote-learning*, *profact*, or

*proverbal pedagogy*' (69, original emphasis). This he sees as an instance of 'The deep aversion to and contempt for factual knowledge that pervade the thinking of American educators' (54).

Hirsch criticizes 'some theorists of the political Left' for their 'ideological attack' against the 'banking theory of schooling,' which he glosses as

A phrase rejecting the idea that adults transmit wisdom to students and stock students' minds with important knowledge that will be useful in the future. Such knowledge, opponents of the banking theory say, merely indoctrinates students into accepting the social status quo. They recommend that the banking theory be replaced with 'critical-thinking skills' ..., which will develop independent-mindedness and lead to social justice. (244)

Here we see the second of two expectable objections to the broader conception of curriculum. The first was that understanding curriculum as the course of (trans-)formative experience, which includes school subjects but much more than that, is really a device used by educators who want to change the subject, and devote their energies to other interests besides what should be their primary responsibility for imparting important knowledge and skills. The second objection includes an explanation for the waywardness of educators who seek to evade their responsibilities for curriculum as narrowly conceived in the first objection: This is an objection to understanding of curriculum as a process of change, involving more than just a change in the amount of knowledge and skill that students will have acquired for participation in the social status quo, but—beyond that—the Sartrean conception in which "knowing is a moment of *praxis*," opening into "what has not yet been." This is castigated as a 'leftist' social or political agenda that is competing against, and at the expense of, a more properly delimited educational agenda. Hirsch sees these competing agendas as giving rise to conflicts between ideological value-commitments and factual reality, and he insists that 'In a conflict between ideology and reality, reality always trumps' (1999: 104).

It is easy enough to see in this the kind of fact/value dichotomy that is most commonly recognized as the hallmark of positivism. What is less easily recognized, however, is the way that the response to this position is often equally reliant on the same dichotomy. Consider, for example, this response by Henry Giroux:

Given Gramsci's view of political education, it is difficult to reduce his view of teaching and learning to a form of positivist reductionism in which a particular methodology, such as rote learning is endorsed without questioning whether such pedagogical practices are either implicated in or offer resistance to the mechanisms of consent, common sense, and dominant social relations. ...

[Hirsch] endorses a reductive view of information accumulation in which the critical relation between culture and power remains largely unexamined, except as a pretext to urge working class and subaltern groups to master the dominant culture as a way of reproducing the social order. (Giroux 1999: 10-11)

Without accepting Hirsch's theory of [positive] *meaning* as differentiated from [e.g., practical or political] *significance* (see, e.g. Hirsch 1984), we can use that positivistic dichotomy to see how Giroux's criticism of Hirsch is itself dependant on the positivist fact/value dualism. In his terms, Hirsch could say that Giroux is faulting him for inattention to the social and historical significance of the claims that he is making (and also attributing to Gramsci) about pedagogical significance; but that Giroux is only raising issues of *significance*, or of social, economic, and political implications and consequences, in a way that does not contest the *meaning* of those claims, or their factual validity. The meaning and validity of those claims are not contested, as matters of positive fact. Giroux's argument is one that leaves those contentions of positive fact undisturbed, while urging that they must yield to an overriding concern for social consequences.

The fact/value dichotomy is left unchallenged, except to insist that value-laden consequences are implicated in the *use* of the fact claims that Hirsch asserts, and ascribes to Gramsci. Giroux implicitly insists that value considerations should prevail over the fact claims raised by Hirsch. Giroux does not contest their factuality as such; and the fact/value dichotomy itself is left undisturbed.

The issue is complicated in this context by the way that claims are being simultaneously made about the truth concerning pedagogy and instruction, and the truth of how Gramsci should be understood. Another example of this line of critique, more directly focused on what Hirsch says about education (rather than also about Gramsci, etc.) may be seen in the *Harvard Educational Review* Essay Review by Kristen Buras, which argues that ‘Hirsch’s *The Schools We Need* is but a fragment of an advancing political initiative’ (Buras 1999: 90), and that ‘Hirsch’s belief that he can represent American literate culture unproblematically reveals an unwillingness to avow his own politics’ (80). Challenging his assumption that education ‘is a cognitive-technical process through which factual content is transmitted’ (77), she concludes that:

In the end, Hirsch fails to acknowledge that schooling is a cultural undertaking rather than a cognitive-technical matter. The questions of what and whose knowledge defines an educated and literate person and the implications of these questions are at the heart of critical examinations of schooling. ... In challenging the meaning of education Hirsch embraces, it is perhaps appropriate to pose the question as Paulo Freire (1993) might: Is education about the depositing of information into the minds of people, or is it about engaging in a process of reflection and praxis, naming the world in order to transform it? (Buras 1999: 80)

In other words, judgment on the question concerning education as ‘a cognitive-technical process through which factual content is transmitted’ is pronounced on the basis of political value commitments. Whether Hirsch’s claims about the learning process are valid or not as a factual matter, such matters of fact do not, in any case, dictate the purposes that should be served by public schooling, since these depend on value judgments, and what *ought* to be done cannot be deduced from what *is* in fact the case. Positivists from Hume to Comte to Carnap would have no problem with this framing of the issue, as depending on a choice of social values.

As much as Giroux and Buras may be intent on opposition to the hegemonic discourse of positivism, their critiques remain within the framework of that hegemonic order. Counter-hegemonic discourse and practice (see Whitson 1991b: 77-83) become possible only within a non-positivist framework, one that enables understanding of such things as meaning and human selfhood without recourse to the positivist presuppositions. We will now see how a semiotically-informed understanding enables such a counter-hegemonic alternative.

## 5.2. *Semiotic Principles*

A semiotically informed understanding of curriculum makes clear that curriculum is always and necessarily a matter of human transformation and becoming—not just a matter of ingesting some prescribed knowledge and skills—and that this fundamental nature of curriculum is not just a matter of political commitment or value preferences. Semiotics reveals that learning is not a matter of acquiring knowledge that has the kind of positive meaning that is presupposed in common education practices, and in common discourses about education. Semiotics also makes it clear why curriculum cannot operate as just an organized body of ‘learnings’ to be acquired by ‘learners’ with the kinds of positive identities presupposed in common education practices and discourses. It is not a question of whether learning (in school or otherwise) will be substantially determined within the course of (trans-)formative experience; the question concerns, rather, whether we will understand what we are doing.

The difference in a semiotically-informed curriculum consciousness will be illustrated in the next section, when we revisit some of the examples discussed earlier, such as the examples of the ‘due process of law’ and the conductivity of ceramic materials. This section will quickly introduce key semiotic principles that will contribute to our reconsideration of those examples.

As distinguished from semiology, as well as earlier historic forms of semiotics, semiotics following the work of C. S. Peirce is today, first and foremost, the study of *semiosis*, or the activity of triadic sign-relations, recognizing that

the whole of nature, not just our experience of it, but the whole of nature considered in itself and on the side of its own and proper being is the subject of semiosis—the process and product, that is, of an action of signs coextensive with and constructive of the actual world as well as the world of experience and imagination. (Deely 1994: 187-188)

As Peirce observed, ‘To say ... that thought cannot happen in an instant, but requires a time, is but another way of saying that every thought must be interpreted in another, or that all thought is in signs’ (CP 5.253). Once the semiotic character of thought is recognized, thought itself is understood in a more general sense, such that

Thought is not necessarily connected with a brain. It appears in the work of bees, of crystals, and throughout the purely physical world; and one can no more deny that it is really there, than that the colors, the shapes, etc., of objects are really there. ... Not only is thought in the organic world, but it develops there. (CP 4.551)

What exactly is it that Peirce says is ‘really there’ in the physical world, as undeniably as the colors and the shapes of objects? What Peirce is referring to is the semiotic action of triadic sign-relations:

It is important to understand what I mean by *semiosis*. All dynamical action, or action of brute force ... either takes place between two subjects ... or at any rate is a resultant of such actions between pairs. But by ‘semiosis’ I mean, on the contrary, an action, or influence, which is, or involves, a coöperation of *three* subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs. (CP 5.484; original emphasis)

As an example, let us consider the inflammation produced in response to an infected wound. Among other things that happen, at the microscopic level, white blood cells move into the infected tissues. How does that happen? The immune system has learned through evolution to produce this response, as a mediated response to the infectious agent. But the germs don’t cause this response dynamically. Instead, the system has learned to produce this response when triggered by conditions in the cells and tissues that are interpreted by the system as a sign of the pathology that calls for this response. But the response (or ‘interpretant’) is not just an evolved dyadic response, or dynamic effect, of those triggering conditions, which are the ‘sign’ or ‘representamen’ of the infection (its object). The response is genuinely a triadically mediated response to the pathology itself. One way to understand this is to see that if the response ceased to have survival value as a response to the pathology, it would not simply continue as a dynamic effect of the cellular conditions, but would be liable to become extinct over generations after it no longer contributes to survival of the species. This is one example of the semiotic action of triadic signs, which is not resolvable into dynamic action in dyadic relations between pairs of objects.

Peirce saw semiosis in the physical world as exhibiting the essential principles that are realized more fully in human thought. This continuity enables us to learn about our world through semiotic activity that is continuous with the semiosis of the world itself.

Consider our own understanding of inflammation, for example. Our understanding of the physical processes of inflammation is mediated semiosically by our use of the word ‘inflammation,’ and the development of our concept of inflammation. In the Hebrew book of Leviticus, we read that ‘if the bright spot stay in his place, *and* spread not in the skin, but it *be* somewhat dark; it *is* a rising of the burning, and the priest shall pronounce him clean: for it *is* an inflammation of the burning’ (Lev: 13:28, King James Version). In the first century C.E., the Latin author Celsus identified redness (*rubor*), heat (*calor*), swelling (*tumor*), and pain (*dolor*) as characteristics and as signs of inflammation, to which organ dysfunction (*functio laesa*) was added in 1858 by Rudolf Virchow (Wikipedia 2005). More recently, our concept of inflammation has developed to include not only the kind of macroscopically observable condition referred to in Leviticus and by Virchow, but also the systemic inflammation indicated by a test for C-Reactive Protein (CRP) in the blood—with ‘inflammation’ now understood conceptually in a way that subsumes the phenomena on these different levels.

Our concept of inflammation has developed over centuries of experience with the phenomena. Signs do that: they grow; they grow through the experience of practice and inquiry of individuals and social communities. As Peirce tells us:

Symbols grow. They come into being by development out of other signs .... We think only in signs.... A symbol, once in being, spreads among the peoples. In use and in experience, its meaning grows. Such words as *force*, *law*, *wealth*, *marriage*, bear for us very different meanings from those they bore to our barbarous ancestors. (CP 2.302)

Earlier we noted that ‘species’ in biology is not the same thing as ‘kinds’ in Biblical discourse. Similarly, ‘inflammation’ in today’s medical science does not mean the same thing as ‘*inflammātio*’ in Celsus’s text, *De Medicina*, written two millennia ago—much less the Hebrew word ‘*tsa’rebeth*’ (צָרֵבֶת) in Leviticus. Yet, in some respects that are by no means unimportant, these words are all signs that have been used to signify the same physical phenomena.

We also observed earlier how Hirsch tried to argue that there is just one and the same meaning in both Bohr’s and Schrödinger’s use of the word ‘electron,’ despite the fact that ‘when Niels Bohr used the word “electron” in his theory of atomic structure, he was thinking of tiny solid spheres [but when] Erwin Schrödinger said “electron,” he was thinking of tiny wave packets’ (Hirsch 1984: 222).

Now we can see the crucial difference between positivist and semiotic understandings of what meaning is. For Hirsch, the meaning of a word is its semantic content. Words have the same meaning for different people using them if the content is the same for all of them—if they all share the same ‘self-identical’ meaning, in the sense of ‘self-identity’ that he tried to justify. Such an idea of meaning as content is not limited to Hirsch, but is shared by positivists generally. For Hobbes, Locke, and Carnap, words have a positive semantic content, such as may be grounded in the positive content of sense impressions, conveyed from the sense organs to the brain and then expressed in speech and written language. Words have positive meaning as semantic contents, and propositions have positive meaning as propositional contents constructed from the semantic contents of the words. Just so, for legal positivists, a law has positive meaning as the imperative content of a legally binding rule or command.

Semiotic understanding is radically different from the view of meaning as a content—something that can be contained and conveyed in words and sentences. For semiotics, meaning is not *content*, but *potentiation*. What a sign does is to *potentiate* mediated interpretations of its object. A word or symptom, for example, has existence as a sign only when it participates in triadic signifying relationships, wherein the sign potentiates an interpretant which it brings into a mediated relationship with the object which it signifies. Virchow’s elaboration of the concept of inflammation as involving organ dysfunction was potentiated by the mediating role of Celsus’s text, which served as a mediating signification of the physical phenomena. Of course those

physical phenomena were also signified in Virchow's thinking by an array of other signs of inflammation, synthetically interpreted in his own work (as interpretant), which served in turn (as a mediating representamen) as a more developed sign, for further testing in experience and critical reflection, and more developed and more adequate signification up to our own time (e.g., with our test for CRP).

The growth and development of the sign 'inflammation' cannot be disentangled from the growth and development of medicine itself—or, on a shorter time-scale, the growth and development of individual participants in the science and the profession of medicine. Peirce saw that the same basic principles that are constitutive of signs in general are also constitutive of people as beings in growth and development, both as individuals and as cultures and societies. As Peirce observed the tight connection between signs and the essence of human being and becoming:

the existence of thought now depends on what is to be hereafter; so that it has only a potential existence, dependent on the future thought of the community.

The individual man, since his separate existence is manifested only by ignorance and error, so far as he is anything apart from his fellows, and from what he and they are to be, is only a negation. This is man,

'... proud man,  
Most ignorant of what he's most assured,  
His glassy essence.' (CP 5.316-317)

Peirce held the human self to be of the same nature as the sign in general. This is not the place for any adequate discussion of his ideas in that regard (for this, see, e.g., Colapietro 1989; Fairbanks 1976). For our purposes, it is enough for now to see that people, like thought, concepts, words, and signs in general, are their potential for growth and development, more essentially than they are any kind of already-realized positive self-identical entities. Moreover, this is not a matter of people developing in parallel with an analogical development of their thought and consciousness. Curriculum is but a single course of experience, in which human selves and their thought, consciousness, and habits of human being in the world take form together. Rather than pursuing this abstractly, however, we will observe the difference that it makes when we return to some of our earlier examples, bringing to bear a semiotically-informed consciousness of curriculum.

## 6. Curriculum examples

Rather than introducing new examples, this section will revisit problems that were introduced before, exemplifying practices based on implicit positivist presuppositions.

### 6.1. *The 'due process of law'*

Here is the definition of 'due process' found in Hirsch's 'dictionary' of 'what every American needs to know':

**due process of law** The principle that an individual cannot be deprived of life, liberty, or property without appropriate legal procedures and safeguards. The BILL OF RIGHTS and the FOURTEENTH AMENDMENT to the CONSTITUTION guarantee that any person accused of a crime must be informed of the charges, be provided with legal counsel, be given a speedy and public trial, enjoy EQUAL

PROTECTION OF THE LAWS, and not be subjected to CRUEL AND UNUSUAL PUNISHMENT, unreasonable searches and seizures, DOUBLE JEOPARDY, or SELF-INCRIMINATION. (Hirsch, Kett, and Trefil 1988: 313, SMALL CAPITALS cross-referencing other entries in the *Dictionary*)

Hirsch's dictionary seems to provide an adequate definition of 'due process,' without the problem we observed in the Delaware state standards for civics education, which call for fifth-graders to 'understand that the principle of "due process" means that the government must follow its own rules when taking actions against a citizen' (Delaware Department of Public Instruction 1995: 35).

Although Delaware's gloss on 'due process' does not provide an adequate definition of the principle, the problem is not that the statement is completely wrong. As a generality (but not as a definition of the concept), 'due process' does mean that 'government must follow its own rules'—if 'means that' is understood to indicate a consequence or implication of the principle, rather than a definition of the *sense* or *meaning* of the principle, the concept, or the phrase as such. (I might be right if I say that the whistle from a nearby factory means that I am late for my next meeting; but that would not be the correct answer for somebody wanting to know what the whistle *means*, for example, in the sense that it might mean that it's time for one work shift to end and the next shift to begin.)

The Hirsch dictionary definition does not suffer from the defect found in Delaware's state standards. If meaning were the kind of positive 'content' that can be contained in definitions, then this definition might be good enough to contain the meaning of 'due process.' But semiotics shows us that meaning is not content of this kind. No matter how accurate the silhouette presented in a definition, it remains no more than that—a silhouette. Students will have no chance to understand the real meaning of 'due process' unless the course of their experience with the concept includes more than just such silhouettes.

At the core of the idea of 'due process' is the notion of a *ratio* or *proportionality* of procedural protection that is appropriate for the severity of the consequences that are potentially at stake. Due process is the process that is *duly* called for in relation to the consequences. I can see this notion of 'sufficient procedural protection as *is due*—in relation to potential consequences,' in the word 'appropriate' in Hirsch's dictionary definition. But will *the students* see it? Will our curriculum practices enable students to form this understanding, and will our assessment enable us to tell how well they've grasped the concept?

If the actual performance for which students, and their teachers, are held accountable is the performance for which students will be given credit in the kind of high-stakes testing that is now used to implement the 'No Child Left Behind' legislation in the United States, then the kind of definition that we see in Hirsch's dictionary must be considered in terms of how it is likely to inform the actual curriculum, or the course of lived experience, in which formation of an understanding of 'due process' will take place within the student's comprehensive self-formation. (It should be noted at this point that Hirsch himself has been referred to as the 'father' of the state standards in Virginia, which include the standards on 'due process' quoted above. See, e.g., Still 1999; Wermers 2001.)

The problem here is not any kind of defect in this definition, in particular; rather, it is a problem that would result from any attempt to reduce the meaning of 'due process' to the kind of positive content that can be contained in a definition—any definition, no matter how complete or accurate. In this case, the definition starts with the abstract requirement of 'appropriate legal procedures and safeguards,' and then enumerates requirements on a more concrete level ('must be informed of the charges, be provided with legal counsel,' etc.). When curriculum is reduced to this kind of content, the course of experience is all too predictable: Conscientious students studying for their tests will be prepared to select or reproduce the abstract statement on cue, and they will also be prepared for 'application' of the concept, by recalling the more specific requirements (e.g., the right to counsel, etc.) when prompted for a response to hypothetical

scenarios. Studious students will prepare by rearranging the specifics in bulleted lists or outline form. Teachers themselves might also do this, in their lesson plans or even PowerPoint presentations created for the students. And this is just what the teachers and their students are being held accountable for teaching and for learning, in a system where the high-stakes item-writers are working from the same kinds of definitions, outlines, and bulleted lists.

What gets lost is true understanding of the real meaning of ‘due process.’ In law, due process has never been just a fixed list of procedural requirements. Due process has always been an idea of justice that is always open to interrogation and development in the context of particular new cases, questions, and circumstances. As Peirce said, ‘symbols grow,’ and due process—which is a symbol signifying one aspect of justice—is no exception. One does not understand the meaning of due process unless one understands it as a growing symbol, and *not* as something with a fixed positive content as its meaning.

To paraphrase what Peirce said about signs in the form of thought: The meaning of ‘due process’ now, depends on its ongoing realization in future cases; so that it has only a potential existence, dependent on future interpretation by the community. Failure to appreciate due process as a concept that is unfolding through experience from Magna Carta to the U.S. Civil War to the as yet undecided issues of our own day and age, is a failure to understand the meaning of due process in its deepest essential character. Memorizing bulleted lists of requirements such as the right to counsel, etc., might be part of learning what ‘due process’ means; but, depending on the curriculum—i.e., the course of experience—within which the list is memorized, it could function rather as a silhouette learned as a substitute for the more basic meaning of due process.

Such calls for authentic learning are often met with the objection that the real meaning of a concept like ‘due process’ is too subtle, complex, and ill-defined for school-aged children, and that at their age what they need is simplified content that can be spelled out in more definite terms. But anyone who has spent any time at all with eight-to-ten-year-olds knows how deftly and cogently they reason and argue about whether a punishment is too much or too little in relation to what they (or their sibling or a classmate) has done wrong, or whether they got a fair chance to tell their own side of the story. If students understand how ‘due process’ is essentially concerned with this kind of problematic, then they can understand the right to counsel, the right to confront one’s accusers, etc. as implications of the more basic concept, rather than as a set of fixed requirements that define (i.e., as a *de finis* delimitation) the concept itself.

## 6.2. *The ‘c+i fallacy’*

Does any of this justify the claim that curriculum consciousness must concern itself with the ‘course of (trans-)formative experience,’ and not just a body of well-organized and worthwhile content? Even if everything I’ve said about ‘due process’ is correct, why isn’t it then good enough if we just get the content right, and then go about developing instructional methods and techniques that are demonstrably effective in helping students develop their own conceptual constructions of the meaning of ‘due process,’ so that they understand what ‘due process’ really means, and they have not learned just a poor substitute or silhouette.

People in education will have noted that the paragraph above is written in the language of ‘constructivism,’ which recognizes that knowledge can always and only be a matter of meaning constructed by the knowers. This is different from the idea of knowledge as something that can be transmitted and received without the need for such construction. Despite that difference, however, it is still possible (and common, I would say) even for constructivists to regard constructed meaning positivistically, as the positive content of curriculum, so that curriculum consists of such positive content, and the job of instruction is to support learners’ construction of such positive content within their own understanding.

For convenience, I will refer to the idea of ‘curriculum plus instruction’ as the ‘c+i fallacy.’ We cannot regard curriculum as one thing, and instruction as another, unless we are attending only to what we see as a ‘content’ that can be learned more or less effectively through different processes of instruction, while still being regarded as *the same* curricular content, irrespective of alternative instructional processes. Curriculum consciousness reveals the fallacy of this approach. Curriculum consciousness is consciousness of the course of experience in which the formation of understanding happens as part of the formation of those who are in the process of coming to understand. On another level, the formation of our culturally shared concept of due process happens as part of our historical formation as a culture. Curriculum is the course of experience in which new members of the population become members of the culture, as formation of their personal understandings of shared cultural concepts (e)merges with historical formation of those cultural concepts themselves.

Curriculum consciousness involves awareness that there are differences in intellectual and personal formation that emerge from different courses of experience through differences in instructional activity. Instructional activity takes place within curricular experience, so ‘instruction’ cannot be understood as something different from curriculum, even as an added effort needed for implementation of curriculum (as if curriculum could be considered as something separate, apart from the experienced activities—e.g., as if curriculum could be a program of positive content organized for delivery through instruction).

If curriculum is investigated at the level of the individual, empirical research could document the ways in which the curriculum experienced by any person in the classroom is in some ways distinctive, while in other ways shared in common with other members of the class. The concept of ‘due process’ formed by each member of the class will differ in some respects from that of all their other classmates, insofar as each member’s experience is in some ways unique. It would be possible to ensure that every member of the class will reproduce the same verbatim definition, on cue, when prompted to recite or to answer a test question. In that case, it might be possible to pretend that the conception they have learned is all the same for everybody. But that pretense is possible only if we ignore the differences in how ‘due process’ would be variously signified (in words, actions, emotions, etc.) by each of them in different circumstances. The understandings they have formed will vary in some respects, which may be more or less significant, even if a test can be contrived on which those understandings will cast matching shadows or silhouettes.

Of course, we can design programs of instruction that will maximize the commonality of the curriculum experienced, especially if we are willing to pay the price of minimizing the possibilities for students to learn anything about ‘due process’ beyond the silhouette required for the exam. Such curricular practice is more likely in a regime—such as the ‘No Child Left Behind’ regime of high-stakes testing in the United States today—where teachers in many public schools are compelled to treat test scores as the ends in themselves (see, e.g., Kozol 2005: 109-134).

Let’s consider these alternatives:

First, let us consider the curriculum envisaged in the Delaware state social studies standards, as officially adopted by the legislature of the state. The text of the 1995 standards document begins with a five-page introduction on ‘The Challenge of Citizenship’ (Delaware Department of Public Instruction 1995: v-ix), which explains the purposes that the social studies standards were designed to serve:

Citizens must be educated in order to perform the essential tasks of maintaining the nation. ... An essential component of public education is the development of the knowledge, skills, and dispositions necessary for participatory citizenship. This commission has been charged to define the curriculum framework for schools in Delaware to use in achieving that end. (v)

Acknowledging that ‘the republic created at the [constitutional] convention was far from perfect,’ the opening section quotes Benjamin Franklin, Thomas Jefferson, W.E.B. DuBois, and Delaware’s own John Dickenson on the essential role of ordinary citizens in not only preserving a republican democracy, but in rectifying and improving government and polity to bring about a fulfillment of the founding ideals, declaring that

On December 7, 1787, Delaware became the first state to ratify the U. S. Constitution and accept its challenge to ordinary American citizens that they assume the responsibility for the security of personal liberties and the sound functioning of the government. (ibid.)

In the curriculum as signified in the legislated standards document, students are engaged as active and participating citizens, upon whose understanding of, and commitment to, the founding principles of our country, the very future of our constitutional democracy is seen to depend. In a classroom committed to this curriculum, the formation of students as citizens would be the ultimate and ever-present concern; and the more specific standards would be interpreted in practice in ways that serve their stated purpose.

What would this mean for instruction fostering an understanding of ‘due process’? In their curriculum experience, students would be engaged as new members of a political and cultural community in the pursuit of a centuries-long effort to realize the promise of this principle. Along with actual cases of great historical significance in which we, as a culture, have struggled over the meaning of ‘due process,’ present-day common examples, in daily classroom life and other familiar contexts, could be used. As is noted in the standards document itself:

‘The glory of the world is the possibilities of the commonplace and America is America because it shows, as never before, the power of the common, ordinary, unlovely man,’ wrote W. E. B. Du Bois. ‘This is real democracy....’ (ibid.)

When teachers engaged in *this* curriculum (i.e., a curriculum informed by the vision stated in this ‘Introduction’) encounter the benchmark on page 35 which requires that fifth-grade students ‘will understand that the principle of “due process” means that the government must follow its own rules when taking actions against a citizen,’ they will interpret this benchmark within the context of the purpose that it was written to serve, i.e., the purpose of equipping young citizens with the understanding of basic principles that they will need for their participation in the preservation and improvement of our political community. Teachers in *this* curriculum will want to make sure that students get a true understanding of the basic principle, and can see how government following its own rules would ordinarily be an implication of that principle. Teachers would not be satisfied if students merely could reproduce that language when prompted on a test, and they would be especially concerned to make sure that students are not misled into mistaking this (or even the list of specifics in Hirsch’s dictionary definition) as the core meaning of the principle itself. As one test, teachers would want to know that students would be able to recognize when due process is violated by a government following rules that do not ensure due process.

For convenience, we may refer to the above curriculum as ‘due process curriculum #1,’ and then contrast this with ‘due process curriculum #2,’ which is a dramatically different curriculum that could be ostensibly enacted under ‘the same’ set of standards.

Curriculum #2 makes no reference to the purposes of the standards as adopted by the Delaware state legislature. Teachers are no longer given copies of the document with the pages that articulate those purposes. In 1998, after the Department of Public Instruction was replaced by the Department of Education (now part of the Governor’s administration, with a politically-appointed Secretary), the Standards document adopted by the legislature was replaced in system-wide distribution by a new *Teachers’ Desk Reference*, which included grade-by-grade ‘performance indicators’ along with the enumerated standards for each subject and grade-cluster

benchmarks, but without the language laying out the purposes to guide interpretation of the more specific standards.

The benchmark that seems to define ‘due process’ as a requirement that government must follow its own rules has not been changed. It appears on page 1-3 of the 1998 *Desk Reference* and on page 4 of the 2001 document with revised ‘Performance Indicators’ (Delaware Department of Education 1998, 2001). There is no performance indicator specifically for due process in the 1998 version. The performance indicators for fourth- and fifth-graders related to the more general standard (‘Students will understand the principles and ideals underlying the American political system’) were:

Students will be able to:

[4<sup>th</sup>-graders:]

4.406 explain what the Bill of Rights is.

4.407 list five of the rights guaranteed by the Bill of Rights.

[5<sup>th</sup>-graders:]

5.405 list and explain seven of the rights guaranteed by the Bill of Rights.

5.406 give examples of ways the Bill of Rights directly affects everyday life.

(1998: page 1-6)

The currently-used 2001 revision now includes a specific performance indicator stipulating that in fifth grade ‘Students will be able to ... 5.405 explain “due process” and its impact on the citizenry’ (page 5).

This new fifth-grade performance indicator for ‘due process’ seems more open to teaching for a real understanding of the principle, and there is now a glossary item that defines ‘due process’ more adequately as ‘the requirement that the actions of government be conducted according to the rule of law. No government can be above the law’ (2001, 45). But how are teachers to make use of these ‘performance indicators,’ in relation to the ‘benchmarks’ or ‘end of grade cluster’ expectations? This question is answered explicitly on the first page of the Introduction to the *Desk Reference*:

#### The Relationship of Performance Indicators to Assessment

... specific performance indicators are provided for each content area at each grade level to show the continuum learning should take over time. For purposes of assessment, ‘end of grade cluster’ expectations will serve as the basis for our Delaware Student Testing Program (DSTP). (1998, ii)

In other words, notwithstanding the marginally improved language on due process in the revised documents, the one thing students and teachers will be held accountable for is students giving the ‘right’ answer on the high-stakes DSTP test, according to the ‘government must follow its own rules’ definition in the 4-5 ‘end of grade cluster’ expectation or benchmark.

It is within this regime that we may consider the alternative ‘due process curriculum #2.’ There is no longer any reference to the standard’s civic purposes—the document with the ‘Introduction’ adopted by the legislature has not even been distributed since 1998. Instead of being engaged as citizens whose concept of ‘due process’ is being formed as one aspect within their formation as members of the civic polity, students are now addressed as ... *students*—who are responsible *not* for an understanding of basic principles that will enable their participation in the preservation and improvement of our political society, but responsible instead only for getting the required answers (correct or not) on the high-stakes standardized state test.

This is the regime of the presupposed positivist ideology. The role of students is to acquire the prescribed positive knowledge content. The positive meaning of the prescribed knowledge is to be learned by ‘learners’ with their own positive identities—whose formation is not a matter of concern for this curriculum, beyond their attainment of the tested knowledge. ‘Due process’ has

its own positive meaning, which they can learn without reference to problematics in the ongoing formation of themselves or their political societies. As a legislated item, the ‘due process’ benchmark means what it means positively, without reference to any preambulatory statement of guiding values or purposes; just as the ‘Due Process’ clause itself has its own positive meaning, according to the legal positivists.

The ‘c+i fallacy’ presupposes a separability of positive content and effective transmission, such that problems like the understanding of ‘due process’ could be taken care of by getting the content right and then finding the most effective means of instruction for a given student or group of students (e.g., teacher-centered direct instruction, student-centered ‘constructivist’ pedagogy, etc.). A semiotically informed perspective reveals how the substance of what’s learned within curricular experience is not separable from the experience itself, as an experience of a person who is herself presently a sign of the person she’s becoming, and who interprets a phrase like ‘due process’ as a sign of a concept which is itself but a sign of the more fundamental principle, which is being formed along with the formation of ourselves as individuals and as a society.

### 6.3. *Ceramics as superconducting materials*

The idea of ‘due process’ as a concept in formation, which is to be understood by people who themselves are in the process of formation both as individuals and as societies, might be relatively easy for some people to recognize as appropriate for social studies, which may appear to be exceptionally historical, by its very nature, as a subject area. On that basis, the case for a non-positivist perspective on curriculum might be accepted for this subject area as an exception, without being generalized to other subject areas, such as the ‘positive sciences’ like physics and chemistry.

Let us reconsider the example we saw earlier, in which a small number of highly advanced laboratories around the world were competing furiously with each other to achieve superconductivity at temperatures approaching that of our normal environment. The *Nova* documentary on the *Race for the superconductor* shows doctoral and post-doctoral researchers in Paul Chu’s laboratory at the University of Houston working at a high fever pitch, bringing mattresses into the lab so they could work together around the clock as a team, with no one wanting to risk being asleep at home when the big breakthrough would come (Garmon and Lyman 1988).

The most dramatic breakthrough was made by Chu’s team at Houston, after progress was delayed for a time in a laboratory at the University of Tokyo, where the hierarchical structure of authority was such that even a less senior professor, as we saw above, was intimidated from sharing with the laboratory head the crucial article for which the Swiss team was eventually awarded the Nobel Prize.

Here we see curriculum at the highest level of specialized research in just about the ‘hardest’ of hard sciences (the physics of materials starting at 0° K), where we can still see how consequential is the way that the formation of understanding occurs within the formation of those who are coming to understand. Transformations in the semiosically mediated understandings of ‘ceramics’ and ‘superconductivity’ flowed more easily where the learners were being formed as collegial researchers, rather than as underlings and lab assistants, and where the positive conception of ‘ceramic’ as meaning ‘non-conductive’ exerted less authoritative resistance to the free flow of inquiry.

We see here, at once, the formation of new understandings of ceramic materials and the phenomena of superconductivity, and the formation of young newcomers to the discipline, as well as the ongoing formation of the discipline itself. What we saw in elementary school social studies is true of curriculum, even at this level, in the hard sciences as well. It is, as Maxine Greene noted, a matter of ‘surpassing what is merely “given”,’ and ‘opening into “what has not

yet been” (Greene 1971: 253). And, as Peirce said of thought: ‘thought is what it is, only by virtue of its addressing a future thought,’ such that its existence now ‘depends on what is to be hereafter; so that it has only a potential existence, dependent on the future thought of the community’ (CP 5.316), and such that the meaning of ‘ceramic,’ ‘superconductive,’ etc. is not positive, but virtual—to be elaborated in the future community of the inquiring discipline through the curriculum of its participants (in this case, the course of their experience engaged in mediated interaction with materials, in a material world that is itself being transformed—but only in accordance with its own material possibilities—through the purposeful interaction with those engaged in the inquiry).

This example also helps us understand Deely’s point about how we know (and learn to know) the world in semiosis because it is in semiosis that the world itself—and we within it—comes to form: i.e., in ‘an action of signs coextensive with and constructive of the actual world as well as the world of experience and imagination’ (Deely 1994: 187-188). In this case, the reality of ceramic matter that exists in the physical world is no longer as it was merely twenty years ago. Triadic sign relations include object, representamen, and interpretant, and all may be (trans-)formed together in the continuing growth of the sign.

#### 6.4. *Representational directives in the elementary school classroom*

When we considered Minick’s observations on the pedagogy of ‘representational directives,’ we concluded that what is being taught and learned ‘is the idea, transcending particular activities, lessons, school subjects, and grade levels, that there are positive right answers, and that your job is to obtain these answers, which you can do by implementing the procedures dictated by positive authority’ (section 2.6, above). At that point, we were observing presuppositions of positive meaning and authority, and had not yet made the turn to a ‘repopulated’ vision of curriculum. Now that we are looking at curriculum as the course of experience in which knowledge and ability take form within the (trans-)formation of the persons and communities involved, we have new questions to consider with regard to this kind of pedagogy.

Minick was careful to note that there may be occasions for teaching students to carefully and precisely follow ‘representational directives’ as a specific kind of learning, for particular purposes. In some classrooms, such occasions are exceptions to the norm; but Minick observed classrooms where the pedagogy of representational directives seemed to be a prevailing norm, even when the ‘bracketing of situational sense’ that is required for acceptable participation in that pedagogy actively prevents students from learning to understand the literary or mathematical meanings of the poems or the math problems they are working with—i.e., what those poems or those problems would mean to people in the real world outside of that peculiar classroom regime, but also in another classroom where the focus would be not only on an everyday-type use of the poems and math problems, but on exploitation of those poems and problems for development of more general mathematical and literary understanding and competence.

Now we can ask: What kind of human (trans-)formation is effected in a curriculum where following representational directives is the norm? Aside from the metacognitive lessons about positive meaning and authority that we noted earlier, what kinds of people, and what kinds of community, are formed in such curriculum? Ultimately this is a question for empirical curriculum research. It is not difficult to hypothesize, however, that graduates from such a pedagogy are not likely to be the kinds of junior scientists who would stand up to an authoritarian laboratory boss and press for serious consideration of a newly published paper which suggests that, contrary to conventional wisdom, a new form of ceramic material might provide a solution to the challenge of high temperature superconductivity, or the kind of citizen or public servant who would stand

up to officials to point out how, in a case at hand, the principle of due process would be violated even if the government has followed its own rules.

## 7. Semiotically-Informed Curriculum Inquiry as Theory, Practice, and Curriculum

For curriculum theory and semiotics, the point is that the understanding students learn to find in poems, mathematically-involved problems, problems involving principles such as ‘due process,’ or concepts signifying ‘superconductivity,’ ‘ceramics,’ or other natural phenomena, is an understanding formed along with, and inseparably from, the formation of themselves as participants, and of their communities of participation in the activities of language use, mathematical reasoning, social thought and practice, and scientific inquiry.

Such a perspective may seem to be the conventional wisdom in curriculum theory, but that is all the more reason to avoid treating it, perversely, as itself a matter of positive fact, to be accepted dogmatically on the basis of some kind of positive authority. As noted above in our discussion of discourse and dialectics, a curriculum for understanding—including the curriculum of our own formative experience in educational inquiry—requires understanding of conflicting discourses and the dialectical relationships between them. Even if our basic formulations on curriculum and semiotics survive the tests of dialectics, they will not survive unchanged. Rather, as signs, they will grow, as they may need to be refined, qualified, elaborated, etc. in response to dialectical interrogation.

### 7.1. *Does mastication make us smarter?*

A provocative analogy is suggested in the research on cognitive effects of chewing gum (referred to above in the ‘Introduction’ to this paper). In a paper titled ‘Chewing gum and cognitive performance: a case of a functional food with function but no food?’, Scholey relates how in their earlier reported study, he and his colleagues had ‘compared cognitive performance in groups who chewed sugar-free gum, “sham chewed” (mimicking mastication in the absence of gum), or sat quietly’ (Scholey 2004: 215); and summarizes subsequent research with findings that reinforce ‘the need for assessing multiple aspects of cognitive domains’ in this line of research (*ibid.*).

Scholey cites research showing that ‘the act of mastication also plays a part both in the context-dependent effects of chewing and in the absolute enhancement of memory associated with chewing gum’ (216), where ‘contextual’ variables include such things as the flavor of the gum. Scholey notes that in one study, which produced results at variance with other studies, the researchers ‘used a different brand of gum,’ so ‘it is possible that differences in chewing resistance may produce different neurocognitive effects. For example, it is known that gums of different consistency produced different patterns of cerebral blood flow and heart rate changes’ (*ibid.*). With ‘functional foods’ defined as substances ‘whose administration provides something other than simple nutritional load’ (*ibid.*), sugar-free gum may present the anomalous case of a substance that could be a ‘functional food’ despite having no nutritional content whatsoever.

This might be analogized to the notion of instructional activity that could be effective in some way despite having no ‘curricular content’ whatsoever. The ideas of instructional activity having efficacy in some way independent of an experienced curriculum, or of some ‘curricular content’ that could be identified as independent from semiotic experience (the way that sucrose is identifiable in gum, apart from its release in mastication), would be dialectically antithetical to what I have been arguing.

Of course, curriculum inquiry is not like the cognitive neuroscience of chewing gum, which (like ‘rocket science’) is able to advance through controlled manipulation and

measurement of quantified variables. Curriculum inquiry deals necessarily with more complex and subtle matters, such as differences among courses of experience and the related human (trans-)formations that emerge contemporaneously and consequently over time, which cannot be reduced to quantitative measurements. The challenges of curriculum inquiry, however, must not deter us from the kinds of systematic empirical experience that enable us to test, correct, and improve upon our formulations, to elaborate and articulate them with forms of evidence that can be shared with wider publics and ‘stake-holders’ in education, and to inform and advance our practice as curriculum professionals.

Such inquiry cannot be confined or reduced to the form of so-called ‘scientifically based research’ that is now recognized exclusively by the U.S. Department of Education (see, e.g. United States Department of Education 2002). Curriculum consciousness and competence require an altogether different kind of knowledge base, rooted in the actual experience of classroom practice, and attentive to the subtly nuanced differences among classroom experiences and among the conceptual and personal formations that ensue (Hiebert, Gallimore, and Stigler 2002).

Let’s consider one example of how semiotically-informed curriculum inquiry can advance genuine understanding in education, while improving practice in curriculum and contributing to the semiotic growth of concepts and curriculum participants. The Delaware Student Testing Program periodically releases sample items that have actually been used in the DSTP high-stakes test, with bit-map images of actual student responses to the test questions, the scores given to those responses, and explanations for the score given to each of the released student responses. These items are released for use by teachers and school systems as guidance for aligning curriculum and instruction which is now mandated to improve the scores of students on these tests.

One released item that was used on the social studies test for eighth-grade students was intended to elicit student responses that would ‘[give] evidence of the student’s ability to demonstrate the ways in which the means of production ... have a relationship to technology’ (Delaware Department of Education 2002: 4). Students were given a table showing the ‘Work Hours Required to Produce 100 Bushels of Wheat’ declining from 373 Work Hours in 1800, to 47 in 1940, and then 7 in 1970. Students were to be given one point (out of a possible two points) for stating ‘a valid relationship with an inaccurate, irrelevant, or no explanation,’ and given the full two points for this item toward their total score if they not only state ‘a valid relationship’ but also give ‘a relevant and accurate explanation’ (ibid.).

Looking at the released student responses, and the scores that they are given, we can see that some students who apparently thought that they had provided explanations were not given the full two points. It was explained that only one point was awarded if the same information that was already in the table had merely been transposed into prose sentences, without adding anything explanatory. If we try to see the difference between sentences that were awarded points as ‘explanations’ and sentences that received no credit, since they only repeated information that was already on the table, it appears that students got full credit if they used the word ‘machinery’ or ‘machines.’ For example, this answer received full credit, or two points: ‘As technology became better less labour was needed to produce as much as the machines did most of the work’ (p. 8).

Such sample items released with student responses, scores, and explanations can be enormously helpful to teachers and school system administrators. If the job of the schools and teachers is defined as producing test scores, this shows them just the kind of performance that their students must be prepared to demonstrate. If the instructions call for stating a relationship, and then explaining it, students must be sure to go beyond the first statement and supply an ‘explanation,’ which should use words that are not given in the prompt itself.

In the regime of education à la *Silhouette*, this may be a fully satisfactory curriculum. The test purports to measure students’ understanding of economics, and this item purports to measure understanding of technology as it relates to production. We can make a positive decision to accept

‘machines’ as the positive meaning self-identical with the meaning of ‘technology,’ and to accept this kind of test performance as our operational definition of what counts as student understanding of technology in relation to production.

With a semiotically-informed curriculum consciousness, however, we are aware that although test scores might *signify* intellectual achievement, that signification is not infallible—test scores and ‘smartness’ are not simply the same thing, as was implicitly assumed in the *Today* show segment on chewing gum at the beginning of this paper. In this case information from responses to the test item on technology would be extremely valuable to curriculum practitioners who are alert to the semiotic mediations that are involved, not because *the scores* reveal achievement levels in economic understanding, but because *the responses* reveal how the curriculum, including the assessment rubrics, has resulted in *misunderstanding*—or at best a faulty understanding—of the basic economics.

Outside of the schoolish regime of arbitrary positive meanings, use of the word ‘machines’ as equivalent in meaning to the word ‘technology’ should raise questions about the basic concepts themselves. If machines are a form of *physical capital*, then *technology* is something different. Technology may be embedded in machines or other physical capital: for example there is more advanced technology embedded in the latest CPU computer chip than in the chips used earlier. The chips themselves, however, are physical capital. The distinction becomes more clear if we use examples of technology (crop rotation, for example) that can be implemented with no more physical capital than the production process without that technology.

As with the ‘due process’ example, the point is not that there is something incorrect in the test or in the standards, so that everything will be all right if we just substitute the right answer in place of the wrong one. From a semiotically-informed point of view we understand, rather, that any single definition or representation is merely a partial signification, always involving risks of misleading, incorrect, or inadequate interpretations of what it serves to signify. The point is to understand that signs *are* signs, and not positive meanings that are simply right or wrong.

As seen from a semiotically-informed point of view, what we need is professional practice that is always conscious of curriculum as sign-activity, in which understandings grow through critically self-corrective processes of more-and-less successful interpretations of realities beyond the mediating signs and discourses through which they are interpretively understood. What this requires is something very different from the broadly held conventional notion of curriculum as something defined by higher authorities which is then implemented by the teachers, or ‘delivered’ by the teachers to their students. To see what is required, it will be helpful to quote the entirety of the final paragraph in the ‘Introduction’ that was eviscerated from the social studies standards now distributed in Delaware:

The republic is still not perfect; we have much yet to do, as will our children in their time. Citizenship education through the social studies curriculum in our public schools remains a critical element in preparing them to assume their responsibilities. These standards represent a beginning rather than an end. Several years of investigation have led us to this initial identification of what students should know and be able to do in order to meet the challenge laid down by Benjamin Franklin [i.e., the challenge of preserving a republic]. The commission is now relying on the teachers, parents, and citizens of Delaware to join us in implementing them. If we are successful, the process of implementation will be dynamic rather than static, cooperative rather than dictated from above. As Arthur Schlesinger Jr. recently suggested, ‘the American identity will never be fixed and final; it will always be in the making.’ The same conclusion applies to these standards. (Delaware Department of Public Instruction 1995: ix)

The identities of America and of Americans are not fixed and final, and the unfolding of curriculum is a semiotic process which participates in the growth of all these signs. The standards themselves are recognized as growing signs, rather than as fixed and final positive entities. What is not recognized in this paragraph is that this requires a role for teachers and students that is not merely one of implementing something with a meaning that is already determined, positively, in advance.

In adopting the official standards document, the state legislative authority absolutely defines parameters for determining the standards that will be realized in practice, which must be developed in the practice of curriculum participants, including teachers and students. The legislature has determined that there will be curriculum devoted to an understanding of civics and economics, but not to sociology or anthropology; it has determined that students are to understand due process, and the relationship between technology and productivity, while other topics in politics and economics are not specified as mandated standards for curriculum. But how are these specific standards to be defined? How is student understanding of ‘due process’ defined as an aim for the curriculum—or understanding of technology in relation to production?

Befogged by an implicit ideology of positivism, we can imagine that these things are defined as positive law enacted by the legislature, and carry positive meaning as the definition of curriculum to be ‘implemented’ through instruction. The test-scoring rubrics can then be taken as defining what ‘due process’ and ‘technology’ will mean in the understanding for which students, teachers, schools, and school systems will be held accountable.

A semiotically-informed curriculum consciousness makes us aware of other possibilities. As teachers, students, parents, taxpayers, voters, education policy-makers, scholars and researchers, we can refer to the vision expressed in the now-missing ‘Introduction’ to the Delaware state standards, and recognize that the text signifies a vision which in turn signifies the social and educational goals which are the same goals signified as objectives to be achieved through the understandings signified more specifically by the particular items on ‘due process’ and ‘technology.’ In other words, the meaning of the particular items in the standards document is not positive meaning content ‘contained’ within each item, awaiting only implementation. Each item, rather, is a sign; and as a sign it is not a content, but a mediating term that signifies not only the specific understanding signified by that one item, but also signifies the purpose that must be referred to for an interpretation of what the more specific understandings (e.g., of due process, or technology) must be adequate to realize.

When confronted with a gloss on ‘due process’ as meaning ‘government must follow its own rules,’ teachers can deliberate on whether this is good enough to serve the purposes of their curriculum. It is no longer just a matter of observing that this is what’s required by the system (so it may actually be better if your students don’t know any more than this, because then they might not give the required answer; and once they have this answer mastered it is more ‘productive’ to move on to other items). Instead, teachers would ask, ‘Is this adequate for the understanding of our basic principles, to enable our students’ participation in our constitutional democracy?’ Instead of just accepting the examination rubric’s scoring criterion for what counts as an understanding of ‘technology,’ teachers could ask what understanding can be realistically achieved by eighth-graders to enable competent participation in the economy, and competent civic participation dealing with economic choices and policies.

Semiotic consciousness would inform curriculum pervasively, and not only in instances where specific problems are apparent (like the problems that we’ve seen with ‘due process’ and ‘technology’). There may be no problem of that kind, for example, with the benchmarks or scoring rubrics for ‘equal protection’ or ‘inflation,’ but semiotically conscious educators would still be alert to weigh the adequacy and quality of understanding evidenced by the signs that students are producing as interpretations of those concepts.

Semiotic consciousness insists on an awareness of all these signs as always being signs in growth. When Peirce says, ‘... just as we say that a body is in motion, and not that motion is in a

body we ought to say that we are in thought and not that thoughts are in us' (CP 5.289), he is giving more particular expression to the idea of thought, and semiosis generally, as an activity of signs in growth, including our own growth within the progressive signification of the things we care about.

What is in growth here is not only students, and their understanding of due process or technology. Veteran economics teachers who for years may have been satisfied that students understand the meaning of 'technology' when they talk about the role of more advanced machinery, may be alerted by reflection on the scoring of these test results to the possibility not only that their students' understandings may not have clearly differentiated between technology as such, and fixed capital that makes use of technology, but also that their own thinking with these concepts may not have been sufficiently observant of this differentiation. In other words, the concept of 'technology' itself may grow in sharpness and depth, in the minds of teachers as well as in their students' understandings. The curriculum standards themselves, as interpreted in practice by the teaching profession, may grow as well in the quality of student understanding that they serve to signify. Moreover, when the insights arising from reflection on curriculum experience are brought to the attention of the business leaders, policy-makers, academic economists and other experts on the committees that review the official standards documents, they might even realize that they themselves have not been mindful enough of the difference between, for example, investing in technology as such, and investing in fixed capital that makes use of existing technology. The growth of signs that takes place in the growth of students, participates as well in the growth of adults and our adult societies.

Again, the point is not to make sure that we have correctly fixed our definitions of 'technology,' 'due process,' 'ceramics,' or whatever. The point is to develop practices informed by consciousness of curriculum as semiosis, or as signs in growth, rather than as an organized mass of fixed positive content, prescribed by positive authority.

## 7.2. *Professional Practice in Curriculum*

Although an implicit positivist ideology may be more prevalent, practices exhibiting a more semiotically-informed consciousness of curriculum are not hard to find, although they are usually not articulated in the language of explicit semiotic theory. A prominent example is the widely influential 'Understanding by Design' approach (Wiggins and McTighe 2005). This approach emphasizes curriculum practice guided by evidence of real understanding, and the question of how adequately real understanding is in fact signified by the evidence available is always uppermost in the minds and the collegial deliberations of the curriculum practitioners. Besides this one approach, with its specific framework and apparatus, there is a broad array of other efforts to improve practice by educators working together with a focus on student work as evidence of real growth in student understanding (see, e.g., Weinbaum 2004).

As diverse and widespread as these efforts have become, they typically share a consciousness that things taken as evidence of learning are always questionable *signs* of understanding, and that the work of improvement that is focused on such evidence importantly involves the development of the practitioners, as individuals *and* as professional communities, along with the growth of students (as seen through progressive improvement of the evidentiary signs), and the improved competence of teachers and students alike in critically interpreting student work as signs of real understanding.

One form of such practice that has developed over decades in Japan, and is being actively adopted and adapted all over the United States, is 'lesson study' (or 授業研究, which might be better translated, I believe, as 'teaching study'), in which groups of teachers work together over long periods of time developing intricate lesson plans based on careful observation of the myriads of ways students may respond to planned classroom events, and then observing how students

engage with each iteration of the lessons planned (Stigler and Hiebert 1999; Lewis 2002). The ‘lesson study’ practice has developed within a system where curriculum is guided by nationally-standardized ‘Guidelines for the Course of Study’ (学習指導要領), which are no less specifically directive than the state standards for curriculum in Delaware and elsewhere in the United States. In Japan, however, it is recognized that learning outcomes are not exhaustively (or ‘positively’) defined by the official guidelines. Instead, curriculum as practiced by Japanese educators recognizes that ‘the process of attaching meaning to the learning goals is a long one requiring a great deal of work by teachers’ (Stigler and Hiebert 1999: 142).

When U.S. educators learn about the Japanese practice of lesson study, one common response is to say that this approach might work in Japan, but teachers in the U.S. already have more work than they can possibly get done in the time available just with the teaching that they are assigned to do, without having additional responsibility for the enormously time consuming work of lesson study, in addition. Thinking in Japan is very different:

Through the process of improving lessons and sharing with colleagues the knowledge they acquire [teachers] see themselves as contributing to the knowledge base that defines the profession. And they see this as an integral part of what it means to be a teacher. As one Japanese teacher said, when asked why she invests so much effort in trying to improve lessons, ‘Why do we do research lessons? I don’t think there are any laws. But if we didn’t do research lessons, we wouldn’t be teachers.’ (Stigler and Hiebert 1999: 126-127)

The work of improving curriculum by collaboratively learning to observe, reflect on, and plan for students’ classroom experience is integral to teaching itself—and to the curriculum of teachers in which their own identities are formed—and this is recognized and supported with time and resources provided for this practice by the system.

The level of meticulously detailed planning, observation, reflection, and revision is represented in a ‘description of how a group of lower primary teachers planned the introductory lesson for a first-grade unit on simple subtraction with the minuend larger than ten’ (Stigler and Hiebert 1999: 116, reporting on an account presented in Yoshida 1999). In the planning of this lesson, the teachers spent considerable time deliberating on how the choice of numbers for a particular subtraction problem would affect students’ thinking and learning experiences. At one point, there is this exchange between two of the teachers:

Tsukuda: Well, I was thinking. I also thought of using 13 minus 7, but it's really hard to break down 7 into 3 and 4.

Maejima: I see, you mean conceptually.

Tsukuda: Right, conceptually it’s easy to break 6 down into 5 and 1, and it’s easy to break down 7 into 2 and 5, but it’s really hard for first-grade students to break 7 down into 3 and 4. (Stigler and Hiebert 1999: 119)

This exchange is particularly interesting for us, since we see teachers thinking about choices involving the same number combinations discussed by Hirsch and by Carnap ( $5+2=7$ ) and presented in the pedagogy of ‘representational directives’ reported by Minick ( $4+3=7$ ). Carnap, of course, had no thought of prescribing practices for primary school curriculum; but that is exactly what Hirsch is engaged in doing. For both of them, ‘ $5+2=7$ ’ states a proposition with a defined positive sense content. For Hirsch, the ‘curriculum’ is just the organized sequence of positive contents which includes this number fact as one of the positive facts that students are to learn, and the ‘instruction’ should be whatever ‘method’—rote memorization, constructivist inquiry, or whatever—is most effective for students to acquire this positive fact. The regime of representational directives requires students to learn that they should stop trying to understand

task demands by interpreting them in light of ‘situational sense,’ and instead concentrate on precisely following step-by-step positive directions, so that in this way they can be assured of getting the prescribed results.

We can see how the Japanese curriculum is so very different from both of those: ‘these teachers are thinking deeply about the options available to them and the way the experiences they structure in their classrooms will facilitate students’ understanding of mathematics’ (Stigler and Hiebert 1999: 120). The Japanese teachers’ focus was on differences among possible curricula, or in other words, differences among the possible courses of experience that would be differentially formative for their students’ understandings of mathematics, and for their student’s identities as participants in communities of mathematical activity. Toward these ends, their particular students’ lived identities were actively taken into account (for example, in discussions of how the number of members in these students’ families might make a difference in how readily they could manipulate the numbers chosen in constructing the subtraction problem), but not by projection of the kind of positive identities confronted in Lacan’s Imaginary order.

## 8. Some Concluding Thoughts on Practice and Theory

If educators in Japan, America, and around the world can be seen engaged, already, in curriculum practice that is informed by an implicit consciousness of semiosis, then what’s the point in writing (or in reading) about this, anyway?

First of all, despite examples of curriculum consciousness and practice that is at least implicitly aware of semiotic mediation, we still see the preponderance of education à la *Silhouette*, and of positivistic discourse and practice in education, oblivious to semiosis. Every day in the United States children are subjected to curriculum based on—or, more likely, reflected in—lesson plans that define ‘objectives’ in terms of observable student behaviors, posited in themselves as learning outcomes, with no process of critically questioning how well the ‘assessment’ of those behaviors provides real evidence of student growth. In the high-stakes testing regime under ‘No Child Left Behind’ legislation, test scores are uncritically identified with ‘smartness’ itself (as in the *Today* show segment on chewing gum) and, by law, programs are funded only if their effectiveness is proven by ‘scientifically based research,’ which is defined in terms of measures such as standardized test scores.

Secondly, even where we do see practices informed by an implicit consciousness of semiosis, these practices are often enmeshed in situations where they are pitted against countervailing practices that are grounded in positivist assumptions. In Delaware, for example, the state Department of Education is now investing heavily in the ‘Understanding by Design’ approach to professional development, which (as noted above) is constantly concerned with a critical focus on the validity of assessment evidence as questionable *signs* of student understanding; but this (and other similarly enlightened initiatives) is taking place together with the more problematic developments that we have observed. In fact, the standards-based reform movement in Delaware was initially conceived within a framework of criterion-referenced, performance-based assessment. The legislature approved this approach, but then undermined it by insisting on norm-referenced testing for the sake of interstate comparisons (cf. Banicky and Noble 2001). In such situations, there is a tendency to opt for ‘all of the above,’ without recognition of the fundamental paradigmatic differences between positivist and semiotic principles underlying conflicting conceptions of the nature of knowledge and understanding that are implicated in these curriculum decisions. Explicit clarity, rather than just an implicit awareness of semiosis, could be extremely helpful in such situations.

An explicit semiotic framework makes it possible to see positivist ideology for what it is, and to understand how it is different, fundamentally, from practice that is informed (explicitly or

not) by an awareness of semiosis. This could make a contribution of great importance to improvement of discourse and practice in and about education. But I wonder if it might not also contribute something of value to semiotics itself. With reference to the postmodern ascendancy of ‘the way of signs’ over the modern ‘way of ideas,’ Deely writes that

... the moment people began to thematize their experience of communication and to think of communication as such as something real, the moment they began to think of *that* experience as a proper starting point for philosophy, the days of modern philosophy were numbered. For with the substitution of the experience of communication for ideas as the point of departure for considering ‘the nature and extent of humane understanding’, with a belief in the occasional success of communication as the guiding notion for developing the consequences of that point of departure, postmodernism had begun. (Deely 2001: 589)

It seems, to me, that the use of semiotics to make sense of the problems explored within this paper is an instance of people thematizing our experience in one field of communication; and the upshot might be a contraposition of semiotics versus positivism that might offer something new, at least in the context that it brings to bear on thinking about problems that have traditionally been dealt with more hermetically by the philosophers. That’s not for me to judge; and anyway, my own concern is education. But I do want to at least raise the question of whether Deely’s observation might not suggest some prospect for a more dialogical course of experience in theory and practice for the postmodern age of human being in our world—a world ‘perfused with signs, if it is not composed exclusively of signs’ (Peirce, *CP* 5.448).

## Notes

1. The work of Ockham or of Bacon does not fit so well into a consistently positivist approach, although essential elements of positivism can be seen emerging and developing in their work. Hobbes’s synthesis was certainly informed by nominalist and empiricist ideas derived from Ockham and Bacon, but it seems to me that both of them retained lively interests in ideas that were resistant to the kind of comprehensive systematic positivism that I think we do see in Hobbes.

Recognizing *positivity itself*, rather than empiricism, as the ‘backbone’ of positivism also allows better recognition of how varieties of positivist thought have drawn from rationalism as well as from empiricism. This was observed by Habermas in the case of Comte (Habermas 1971: 76-77), and I expect that such observations could be made as well in the case of Carnap. I am not qualified to discuss the relevance of Continental rationalism. More importantly: the focus of this paper is the tacit presupposition of positivist ideas in discursive practices in and about education that I find in the United States, at the level of an all-pervasive common sense, and it seems to me that common sense in at least this part of the English-speaking world is more resonant with the more empiricist discourses of Hobbes and Locke.

2. All published versions of the *Cours de Linguistique Generale* are reconstructions from the notes of students in the course, supplemented by Saussure’s own notebooks. Harris (2001) provides helpful accounts of the note-taking and editing. The ‘critical edition’ cited as Saussure (1989 [1907-1916]) presents the course in six parallel columns: the first five with notes by different students, and the sixth with text from Saussure’s notebooks. Hence, text quoted from this edition is from one of the six columns, rather than the selection by an editor for one of the consolidated versions.

3. 'No sign is thus limited in the sum of positive ideas which it is at the same moment called to concentrate in itself alone; it is never limited but negatively, by the simultaneous presence of other signs; and it is thus useless to seek what is the sum of the meanings of a word.'
4. 'There is no other identity in the morphologic field but the identity of a form in the identity of its employment (or the identity of an idea in the identity of its representation).'
5. 'The concept of identity will be, in all these orders, the necessary basis, that which serves as the absolute basis: it is only by it and by relation to it that one arrives at then determining the *entities* of each order, the first terms that the linguist can legitimately believe to have facing him [*en face de lui*].'
6. 'Prism' is used advisedly here, rather than the expectable 'lens,' to emphasize the use of Lacan's terminology for refractive differentiation, rather than specular observation, as in a mirror or through a magnifying glass. The 'mirror stage' as described by Lacan is the crucial point in the emergence of the Imaginary order, in which an infant attains consciousness of self and others as visible unified beings, such as may confront each other face-to-face.

In this connection, we may recall the Saussure quotation translated above in note 5, where Saussure explains positive identity as the basis for having determinate entities *en face de* the linguist for analysis. It is interesting to contrast this with a passage quoted earlier in which Locke refers to nerves as conduits that convey ideas 'from without to their audience in the brain, the mind's presence-room.' In our time, 'audience' is used for people watching television or a movie, but a review of other instances of the word in Locke's work confirms that 'audience' refers to an occasion for interactive discourse, as in a 'presence-room.' Locke's idea is something positive, with a positive content to be conveyed into the mind, but at that point it becomes potentially an interlocutor. At least in the figures of speech used in these quotations, it is Saussure who posits the linguistic entity as a positive object for a science that becomes positive at this point. In the situation of a presence-room audience, Locke's discourse opens into observation of Lacan's 'Symbolic' order, wherein the culturally-formed discourse of the Other intervenes. A 'Translator's Note' by Alan Sheridan provides a succinct explanation of the Imaginary, Symbolic, and Real (Lacan 1981: 279-280). More extensive discussions can be found in Lacan (1994: see Wilden's commentary, 159-177), Jameson (1988), and Julien (1994).

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**Copy editor:**

**Other Imaginary Symbolic and Real should remain capitalized in text above.**

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7. I. Domaine non linguistique de la pensée pure, ou sans signe vocal et hors du signe vocal, se composant de quantités absolues.  
II. Domaine linguistique du *signe vocal* (*Sémiologie*): dans lequel il est aussi vain de vouloir considérer l'idée hors du signe que le signe hors de l'idée. Ce domaine est à la fois celui de la *pensée relative*, de la *figure vocale relative*, et de la relation entre ces deux.  
III. Domaine linguistique du son pur ou de ce qui sert de signe considéré en lui-même et hors de toute relation avec la pensée = PHONETIQUE.

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Copy editor: “σημείον” should begin with lower-case “σ” in title above.

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