The Politics of Curriculum and Instructional Design / Theory / Form: Critical Problems, Projects, Units, and Modules

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ABSTRACT: What should be learned? How should it be organized for teaching? These seemingly simple questions are deceivingly political. Curriculum theorists are preoccupied with the politics of the first question at the expense of the realpolitik of the second. Instructional designers are preoccupied with the realpolitik of the second question at the expense of the politics of the first. I argue that conceptual distances between curriculum theory and instructional design are based on divisions of labour established during the 1960s. After decades of neglect, curriculum theorists, and specifically critical theorists, appear clueless when it comes to curriculum design and the realpolitik of their causes. When it comes to the realpolitik of practice their political causes are formless. Quite the opposite of critical theorists, instructional theorists nearly mastered the realpolitik of form but have no political causes. I argue that, to contradict the *status quo* of C&I, curriculum theorists will have to dirty their hands with the realpolitik of form and instructional designers will have to clutter their heads with theory.

KEYWORDS: Curriculum, instruction, design, studies, technology, theory, discipline, problem, project, unit, module, politics, realpolitik.

What should be learned? How should it be organised for teaching? Curriculum theorists are preoccupied with the politics of the first question at the expense of the realpolitik of the second. Instructional designers are preoccupied with the realpolitik of the second question at the expense of the politics of the first. Curriculum theorists take it for granted that curriculum flows from politics, the *what* of "what should be learned?" Instructional designers take it for granted that instruction flows from realpolitik, the *how* of "how should it be organized?"

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Theorists neglect design. Designers neglect theory. Of course, there are exceptions to these rules, and I intend to come to terms with the rules as well as the exceptions in the design of curriculum and instruction (C&I). I argue that conceptual distances between curriculum design, curriculum theory, and instructional design are generally the residuals of divisions of labour established during the 1960s. After closing this conceptual space by forming a critical curriculum rationale, I open up the historical record by addressing the cases of problems, projects, units, and modules. I demonstrate that the form of reform is a political matter – curriculum reform is a matter of the politics of knowledge *and* the realpolitik of form. In the final analysis I argue that, to contradict the *status quo* of C&I, curriculum theorists will have to dirty their hands with the realpolitik of form and instructional designers will have to clutter their heads with theory.

Curriculum Design

The politics of "what should be learned?" and "how should it be organized for teaching?" are eventually resolved, whether by consensus, fiat, or might, through processes of *curriculum design*. One is basically a question of political content, the other a question of political form. Neither can be resolved without changing the other – the questions are dialectically related. We can say that curriculum design involves the forming of educational content and the contents of educational forms. These two seemingly practical questions can be deceivingly political. The practice of organizing curriculum – activities, environments, goals, knowledge, student and teacher interests, social conditions, technologies, values, and the like – into a containable pedagogical or andragogical form involves a series of political judgements. Judgements are necessarily made on what and whose knowledge is of most worth, the scope and sequence of this knowledge, how student desires will be sublimated, what technologies to deploy or purchase, and so on. Curriculum designs are negotiations in the politics of knowledge, identity, and representation and differ accordingly. They lend form to, and chart provisions for, the processes of learning and teaching and become concrete and operational at various stages of educational practice. The very nature of student experiences are shaped by the way we choose to design, or not design, curriculum. In other words, different curriculum designs provide varied qualities and powers of experience and knowledge (Beyer & Apple, 1988; Eisner, 1979; Schubert, 1986). Curriculum design might at first glance appear to be about the

economics and pragmatics of teaching, about arranging content and assignments, apportioning time on timetables, and allocating resources. However, mundane *and* profound judgements are made when we plan, shape and judge human experience. Congruence between educational outcomes and curriculum documents is virtuous; but when curriculum design is seen as the moral and political endeavour that it is, the issue takes on deeper significance.

Curriculum design involves a re/production of forms into which curriculum is cast or organised. Curriculum is generally organised through designs such as: *Disciplines* (e.g., mathematics, engineering, humanities, sciences); *Fields* (e.g., art, civics, design, home economics, industrial arts, social studies); *Units* (e.g., bicycling, child labour, feminism, jazz, mass media, queer fiction, verbs, water colours); *Organizing Centres* (e.g., activities, modules, minicourses, problems, processes, projects, tasks, and competencies); or *Personal Pursuits* (e.g., aerobics, autobiography, cooking, bird watching, guitar playing) (Burton, 1952; Herrick, 1950, 1957; McNeil, 1981; Miel, 1964; Pinar, Reynolds, Slattery and Taubman, 1996, pp. 684-698; Schubert, 1986, pp. 189, 233-260; Smith, Stanley and Shores, 1957; Taba, 1962, pp. 382-412; Venable, 1958, pp. 61-81). *Core* or *Interdisciplinary* designs employ combinations of disciplines or broad fields (Petrina, 1998). Disciplinary, field, and interdisciplinary designs typically employ units and organizing centres to engage students in pre-structured knowledge. Here, problems and units are developed to establish understandings of organized bodies of disciplinary knowledge. Curriculum designs are generally selected for their powers in bolstering political causes and conferring political status, and since the early 1960s, disciplinary designs have been politically valued over the others (Goodson, 1992, 1993; Petrina, 1998; Pinar, Reynolds, Slattery, & Taubman, 1996, pp. 684-698). High school humanities and sciences employed disciplinary designs in the early 1960s to secure economic and liberal roles. Projects and units conferred a progressive status in the 1910s and 1920s for newcomers in the school curriculum such as industrial arts and social studies. As teaching methods are associated with different theoretical "families" (Joyce & Weil, 1980, p. 9), curriculum designs have theoretical orientations.

Since Eisner and Vallance's work in 1974, a consensus in *curriculum theory* formed around five orientations to organizing curriculum: academic rationalism, cognitive processes, self-actualisation, social reconstruction, and utilitarian. Academic rationalist orientations are primarily about disciplinary knowledge and

cultural canons (Petrina, 1998). Cognitive process orientations are primarily about intellectual reasoning skills such as problem solving. Self-actualisation, or personal relevance, orientations stress psychological conditions and are concerned with individuality and personal expression (Petrina, 1993). Social reconstruction, generally called critical pedagogy, orientations stress sociological conditions, social justice, and collective reform. Utilitarian orientations are primarily concerned with functional competencies, performance, procedure, and instructional efficiency. Curriculum designs, Eisner and Vallance maintained, are conceptually grounded in any or a mix of these orientations. From these orientations, notions of transmissive, transactive, and transformative curriculum were derived. Habermas (1971) forged the groundwork for these orientations, suggesting that technical, practical, and emancipatory interests differentiate the sciences. A basic conclusion from this is that generic, neutral theoretical orientations and designs for organizing curriculum simply do not exist (Beyer & Apple, 1988; Eisner, 1979; Herschbach, 1989; Jackson, 1993; Mazza, 1982; Ornstein, 1984; Pinar, 1988; Pinar, Reynolds, Slattery, & Taubman, 1996, pp. 684-698; Saylor, Alexander, & Lewis, 1981; Schubert, 1986; Short, 1991; Slattery, 1995; Strike & Posner, 1976; Zuga, 1987).

The politics of "what should be learned?" and "how should it be organized for teaching?" are deceivingly simplified in these questions. Asking, "what should be learned" is another way of asking, "what knowledge is of most worth?" Or as Apple (2000) reminds us, these are ways of asking, "whose knowledge is of most worth?" Since Eisner and Vallance's description of theoretical orientations to organizing curriculum, a consensus coalesced. Curriculum historians and theorists conceded that these descriptions were indisputable. Moreover, these orientations – transmissive, transactive, and transformative curriculum or technical, practical, and emancipatory curriculum – have since the 1970s guided decisions and judgements on curriculum. Curriculum theorists played directly into the hands of liberal educators and policy makers who for centuries competitively ranked curriculum by political value: liberal arts and university preparation curriculum continued to be valued over practical or technical curriculum (Goodson, 1992, 1993). Four theoretical orientations, generally ranked in the order previously introduced, now held not only historical status, but also theoretical status over the instrumental or utilitarian curriculum. Furthermore, Eisner and Vallance conflated utilitarian orientations with technology, making for a confused curriculum theory. As a result, any school

curriculum that takes practical work as its subject has a low theoretical status and, as it has nearly always been, a maligned historical status. Today, business, home economics, and technology in the curriculum connote utilitarian, transmissive, and technical practices. Historically, business educators, educational technologists, home economists, and technology educators may have designed utilitarian curriculum, but this was never any more instrumental or utilitarian than the arts, humanities, maths, or sciences for instance. It is a manipulative curriculum theory that whitewashes this historical fact. In fact, Michel Foucault offered a curriculum theory that is much more symmetrical. Control, instrumentalism or the powers of normalisation, said Foucault, are not produced in one form of curriculum and yet reduced in another (Petrina, 2002). By releasing technology from the stranglehold of this theoretical nuis(ance), we leave room for business, home economics, technology education, and instructional design to be as emancipatory, instrumental, radical, or technical as any other curriculum practice (Petrina, 1998, 2000a, 2000b). Indeed, we begin to reposition curriculum design as again a worthy subject of curriculum studies (Figure 1).

Curriculum theorists retreated in the 1970s from curriculum design, instructional design, and technology for very good reasons. Ralph Tyler (1949, pp. v-vi) basically closed the discussion on this practice by summing up centuries of curriculum design into four simple steps. For Tyler, curriculum design amounted to a systematic resolution of four questions, or a rationale:

1. What educational purposes should the school seek to attain?
2. How can learning experiences be selected which are likely to be useful in attaining these purpose?
3. How can learning experiences be organized for effective instruction?
4. How can the effectiveness of learning experiences be evaluated?

In the cybernetic era immediately following Tyler's rationale – an era of cognitive, behavioural, and existential essences (e.g., people are essentially this, technology is essentially that) – curriculum designers such as Hilda Taba (1962, p. 12) believed in the ontological reality behind Tyler's ends-means process:

1. Diagnosis of needs.
2. Formulation of objectives.
3. Selection of content.
4. Organization of content.

5. Selection of learning experiences.
6. Organization of learning experiences.
7. Determination of what to evaluate and the ways and means of doing it.

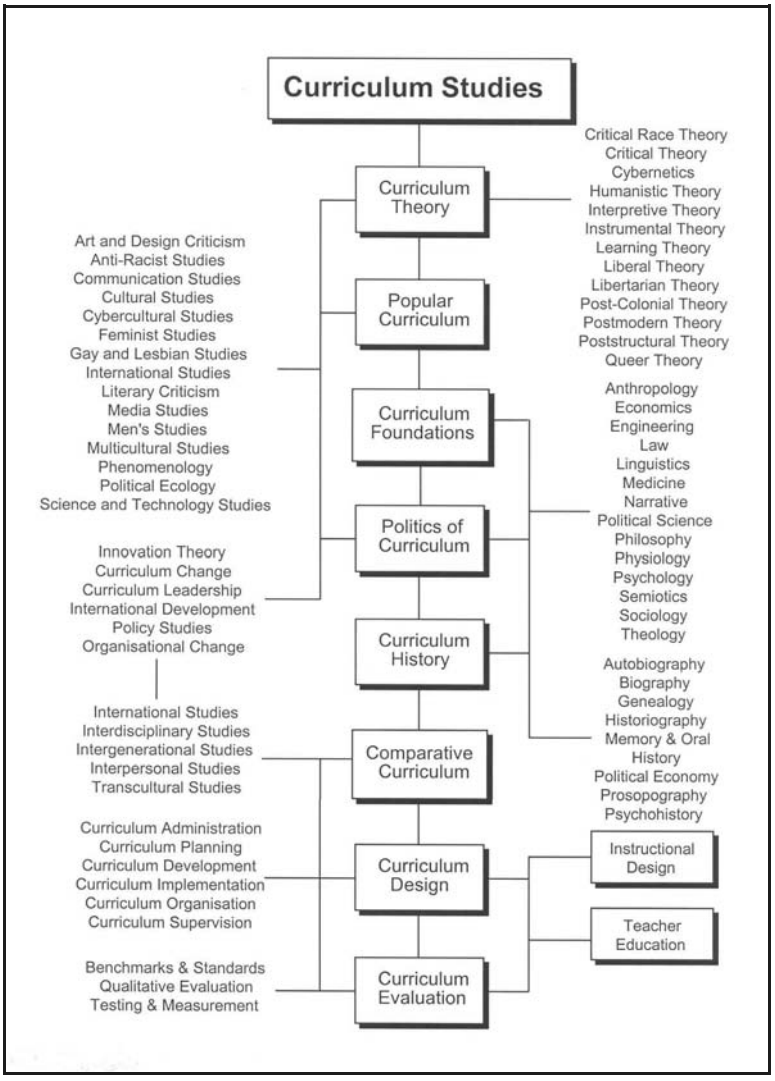

Figure 1. *Conceptual Map of Curriculum Studies*.

Curriculum designers believed that these were the essences of curriculum design. Curriculum design took on a cybernetic form of essential components (Fox, 1962, p. 204) (Figure 2).

Curriculum design became little more than a determination of goals, activities, content, delivery systems, and assessment techniques. If this looks and feels familiar, it is. This distillation of the essences of curriculum design remains central to curriculum and instructional design and has been enshrined in the extremely popular DACUM (**D**evelop **A C**urricul**um**) enterprise. Curriculum theory, between the 1950s and 1970s, was basically little more than an embellishment of how essences ought to be determined and the sources that ought to hold influence.

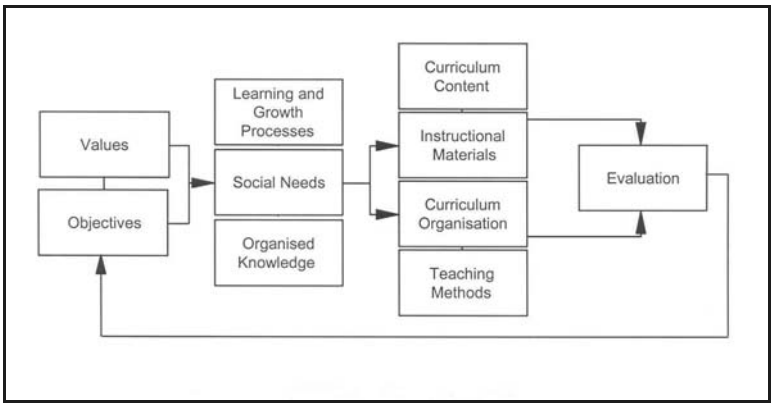

Figure 2. *Model of Essences in Curriculum Design, ca. 1960s to present*.

In the 1970s, for various reasons, a group of curriculum theorists basically concluded that if this is curriculum design, we want nothing to do with it (Mazza, 1982; Slattery, 1995). Generally, they proceeded to drop curriculum design as a worthy endeavour, wrote it off as "institutionalised text" and reconceptualised curriculum theory (Pinar, 1975a, pp. 77-115, 223-249; Pinar 1994; Pinar, Reynolds, Slattery, & Taubman, 1996, pp. 186-239, 661-791). To be fair, they reconceptualised curriculum design but in the process withdrew from realpolitik (Pinar, 1975a, pp. 384-424). Self-conscious of their power, reconceptualists retreated from the dirty politics of curriculum design, threw their hands up and asked, "Who are we to tell people how to design curriculum and teach" (Pinar, 1999)? For many, it was simply a division of labour:

University professors were above design – theory preceded practice. Here, curriculum theory would be the first essential step prior to an undertaking of curriculum design, prior to an undertaking of Tyler's rationale (e.g., Martin, 1994). At their humanistic and libertarian worst, reconceptualists argued that curriculum was best if undesigned – let the curriculum emerge with the students' desires and narratives. At their liberal worst, reconceptualists subscribed to Freud's antagonisms between individuals and society, and declared that schools were "devastating" to the self (Pinar, 1975b, p. 381). Upon rescuing curriculum theory from cybernetics and establishing popular curriculum as an academic study, reconceptualists abandoned curriculum design (Figure 1). The reconceptualists, leaning left, sometimes radical, standing centrist, mostly liberal, effectively relegated curriculum design to instructional designers, liberal bureaucrats, mass media, professional associations, students, task forces, teachers, television programmers, and university entry requirements. Curriculum theory is now left with one position: "gracious submission" (Pinar, 1999, 2004, p. 32). While reconceptualists were undesigning curriculum, everyone else it seemed was designing curriculum.

Today, curriculum theory is generally an academic practice (popular curriculum, Figure 1, Kashope-Wright, 2000), influential in places, and curriculum design is generally a bureaucratic practice (Tyler and DACUM), localised in places. As noted earlier, since the 1960s, Tyler's rationale guided curriculum design and academic disciplines were the default, preferred design. Theorists of critical pedagogy, toward whom I am sympathetic (Petrina, 1998, 2000a, 2000b), are now left wondering why their theories have not been placed into practice (Apple, 2000; Deever, 1996). One of the more politically active of critical theorists, Michael Apple (2000), recently conceded that the elitist position of curriculum theorists toward curriculum design was a political mistake. It is time, he argued, for curriculum theorists to drop their pretensions, roll up their sleeves and get their hands dirty in the everyday politics of curriculum design. Communication was a problem, as Apple observed, but there is more to curriculum form than the good book. After decades of neglect, curriculum theorists, and specifically critical theorists, appeared clueless when it came to curriculum design and the realpolitik of their causes. When it came to the realpolitik of practice their political causes were formless. They thought they could merely assert the ideas of curriculum theory when curriculum forms were needed. Bill Pinar's "second wave," which was supposed to carry curriculum theory to the schools, has yet to roll, according to many analysts (Pinar, 1988;

Slattery, 1995, p. 7; c.f., Wraga, 1999a, 1999b). Admittedly, the second wave trickles into the schools but no one really cares about determining the volume. We can conclude this section by saying that curriculum theorists love the politics of "what should be learned?" (politics of content or knowledge) and the politics of "who should learn what" (politics of identity) but loathe the politics of "how it should be organized for teaching" (realpolitik of form).

Pause: C&I High School

If the field of curriculum studies looks like Figure 1, then why do a vast majority of the university departments of C&I or curriculum studies look like the average high school (i.e., art, business, home economics, language arts, math, music, physical education, social studies, science, technology)? Do answers to the paradox lie in the questions "what should be learned?" and "how should it be organized for teaching?" Are the answers in the differences between politics and realpolitik? To explain C&I High, we need not conjure up divisions between "universities and schools," "male theorists and female practitioners," or "theory and practice," as Wraga (1999a, 1999b) alleged and Pinar (1999) conceded. They are on the right topic but disagreeing over the wrong subject. C&I High is the design – the bureaucratic form – the parent figure – necessary to support the division of labour or difference in politics between curriculum theory and instructional design.

Instructional Design

In the 1950s, generally when instructional design (ID) was established from a field of media specialists, educational psychologists, and industrial and military trainers, instructional designers shrank Tyler's rationale to fit the act of instruction (Merrill, 1971; Reigeluth, 1983, 1999; Tennyson & Schott, 1997). Although some argue that the reverse was true – instructional designers reduced instruction to fit Tyler's rationale – the rationale was tailor-made for curriculum *and* instruction. Regardless, instructional designers took their unit of analysis to be instruction and took their subject of analysis to be the individual, not the group. The premise that there were antagonisms between individuals and society alienated instructional designers from the social group, just as liberal curriculum theorists were alienated from the social. Instructional designers took their cue from behaviourism and humanism while post-1975 curriculum theorists took their cue from psychoanalysis and humanism, but the result was the same. Group or

mass instruction is a subject of interest, but ID was and remains oriented toward, or fixated on, individualisation and individual cognition. Where curriculum studies (Figure 1) was shaped from a practice of curriculum design, which was eventually relegated, ID remains a practice of design (Figure 3). There is not a field of instructional studies and instead of functioning as one with curriculum studies, ID functions as a practice fairly removed from the practices of curriculum studies (compare Figures 1 and 3).

Curriculum designers were sceptical of the enthusiasm in ID during the 1960s, but shared hopes in cybernetics, specifically systems theory. Curriculum designers placed themselves and their endeavour as an input into the ID process. In other words, curriculum designers systematically determined the content and form of curriculum – the answers to "what should be learned?" and "how should it be organized for teaching?" – and a subservient ID determined how to deliver piecemeal components of the curriculum to individual learners. A hierarchy of importance was established, albeit ever so tentative. As the curriculum theorist Johnson defensively argued in 1967,

> A concept of curriculum that limits it to a post hoc account of instruction is of little value. Surely curriculum must play some role in *guiding* instruction. If so, it must be viewed as anticipatory, not reportorial .... Curriculum prescribes (or at least anticipates) the *results* of instruction. It does not prescribe the means. (1998, p. 44)

Curriculum identified and provided a form for the ends of education; instruction tinkered with the means. He reduced instruction to episodes, "consisting of a series of teaching cycles. A teaching cycle involves perception, diagnosis, and action or reaction by a teaching agent and intended learners" (p. 49). Johnson complained that ID "trespassed heavily" on curriculum design, "going as far as to specify not only the learning activities to be provided but the instructional materials to be used, as well" (p. 47).

Indeed, instructional designers were not willing to serve curriculum design. They claimed instructional conditions (content, goals, student characteristics), methods (organisational designs, delivery strategies) and outcomes (evaluation), and in effect curriculum, as the territory of ID. Unable to completely identify with Tyler's rationale, instructional designers contrived an ID rationale:

1. For whom is the program developed? (characteristics of learners or trainees)
2. What do you want the learners or trainees to learn or demonstrate? (objectives)

3. How is the subject or skill best learned? (instructional strategies)
4. How do you determine the extent to which learning is achieved? (evaluation procedures). (Kemp, Morrison, & Ross, 1996, p. 4)

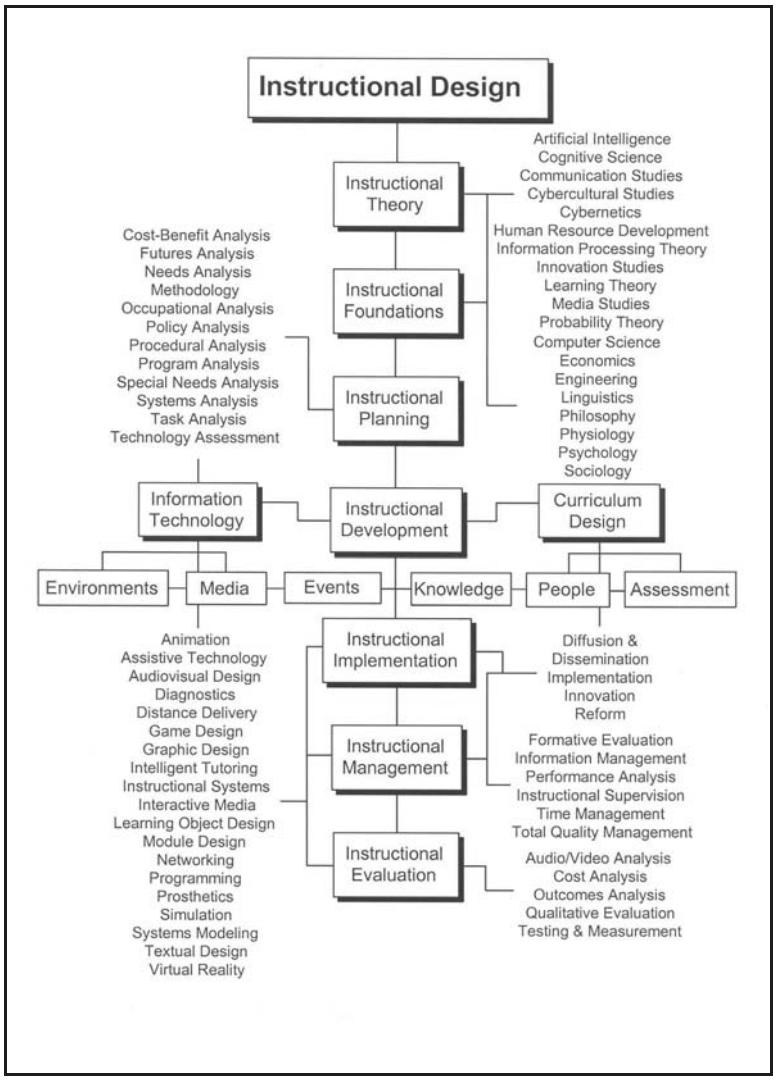

Figure 3. *Conceptual Map of Instructional Design.*

And similar to Taba's distillation of the essences of curriculum design, instructional designers distilled the essences of ID (Figure 4). How they thought curriculum was designed became a model of how curriculum ought to be designed. In instructional systems, there were ten essential components (Gerlach & Ely, 1971, p. 29).

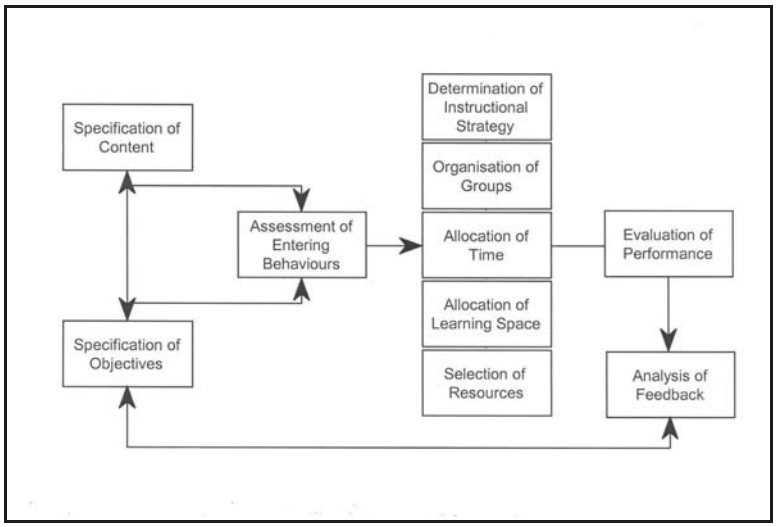

Figure 4. *Model of Essences in Instructional Systems, ca. 1960s-present*.

Not wanting to limit ID to episodes and events, Gagné and Briggs (1974, p. 23) extended instructional systems to include a larger share of curriculum design. Basically since that time, the essences of ID included:

1. Analysis of Needs, Goals, and Priorities
2. Analysis of Resources, Constraints, and Alternate Delivery Systems
3. Determination of Scope and Sequence of Curriculum and Courses; Delivery Systems Design
4. Determining Course Structure and Design
5. Analysis of Course Objectives
6. Definition of Performance Objectives
7. Preparing Lessons Plans (or Modules)
8. Developing, Selecting Materials, Mass Media
9. Assessing Student Performance (Performance Measures).

Instructional designers might have asserted that their unit of analysis was instruction, not curriculum, but their practices proved otherwise. In effect, ID was curriculum design. The assertion that ID's unit of analysis was instruction was political. Instructional designers co-opted the practice of curriculum designers. By the time that curriculum theorists abandoned curriculum design in the 1970s, there was little left to abandon. By washing their hands of curriculum design, curriculum theorists also washed their hands of instruction.

Currently, as one instructional designer put it, ID is "virtually equated with the systems approach" or cybernetics (Molenda, 1997, p. 45). Practitioners of distance education also recently declared ID and its systems approach as universally fundamental to web-based instruction (Bourdeau & Bates, 1997). Cybernetics provided instructional designers with a logic – learning theories and individual heads could be modelled within instructional *and* curriculum systems. In simple terms, cybernetics is the regulation of human and machine behaviours through a system of information inputs, flows and processes, outputs and feedback. Cybernetician Norton Wiener turned to psychologists such as Jerome Bruner, Abraham Maslow, and B.F. Skinner, who were modeling the essential behaviours of animals and humans. What psychology offered cybernetics were essences of particular behaviours and intellectual processes. Original cybernetic notions were quickly moved from narrow, micro concerns with behaviours (e.g., instruction) to account for macro cultural and organisational systems (e.g., schools). Primary interests centred on relationships among components in a dynamic system, on complements and compatibilities among components. Given that cybernetic models captured the essence of human *and* machine behaviours, they looked universal (Bowker, 1993; Galison, 1994; Stanley, 1978, pp. 136-185). Who could argue that instruction and other human-machine activities were not essentially systems of inputs, processes, outputs, and feedback (Figures 2, 4-5)? If prior to cybernetics, practitioners were intending to be universal, cybernetics made instructional processes *look* universal for the next generation (Dick & Carey, 1978; Eraut, 1967; Kaufman, 1968; Mauch, 1962; Romiszowski, 1981, 1984; Silvern, 1968). With the politics of class, culture, disability, gender, morality, and race eliminated, behaviour and cognition could be readily captured in a cybernetic model.

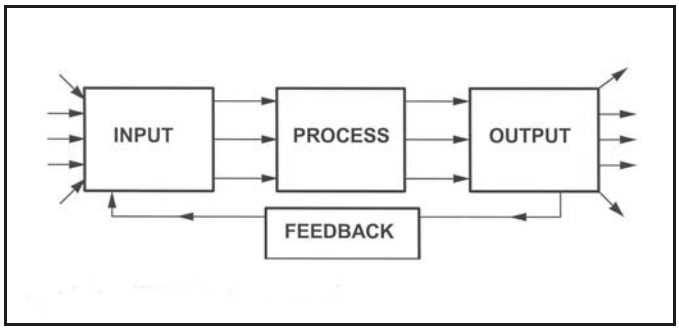

Figure 5. *Universal Systems Model, ca. 1950s-present*.

What makes the design of C&I look universal (Figures 2, 4-5) is neither some existential leap into an emotional realm of gut feeling nor a discovery of ontological reality. What makes this a universal truth is the mundane practice of combining the inventions of cyberneticians with the inventions of psychologists. The ID model assumes a universal, rational agent, who in the process of designing C&I necessarily will suppress values such as greed or prejudice and maximise the utility of other values such as equity for an end that is beyond question. If it were possible to remove the cybernetic dress of these models, through an unveiling of ideology, we could conclude that the emperor of ID has no clothes. But alas, essentialising ID merely brings us back to a cybernetic decision tree: Continue toward a no problem path on the right or move left toward critical ways of modeling curriculum and instructional design.

Indeed, curriculum design as ID as cybernetics is far from indisputable. Similar to curriculum theorists' abandonment of curriculum design for the two or so decades, instructional theorists seem to be wanting to abandon instructional design, and for the similar reasons (Hlynka & Belland, 1991; Molenda, 1997). The disenchantment seems to be more about boredom than anything else. Instructional theorists assume that the essences and forms are firm, and universal – the realpolitik is in the form. These theorists have deduced the two major problems with ID, cybernetics, and psychology, and have threatened to do something radical. But like critical theorists, they appear clueless. ID has few IDeas. Nearly the opposite of critical

theorists, instructional theorists have realpolitik but no political causes. Instructional designers detest the politics of "what should be learned?" (politics of content or knowledge) but specialize in "how it should be organized for teaching" (realpolitik of form).[1]

Critical Curriculum and Instructional Design

With the cybernetic undergarments of curriculum and instructional design exposed, we can approach our problem with a critical orientation. The design of C&I cannot merely be about forming empty systems for implementing official knowledge in predetermined pedagogical forms. The world is much too sensitive, shapeless, and indeterminate for this. Nor can curriculum theory be a masquerade of unofficial knowledge without pedagogical form. The world is much too insensitive, designed, and determinate for this. Curriculum theorists dismissed ID *and* instructional designers dismissed curriculum theory much too easily. Of course, when curriculum theorists abandoned curriculum design, they wanted to throw out baby, bathwater, and all. Not entirely a disposal of the bathwater of ID, Apple (1973) suggested that "the use of systems approaches has an obvious immediate plausibility, [but by this use] we do not do justice to the intellectual complexity associated with systems thought itself or to the intricate nature of instructional relationships in education" (p. 24). He encouraged the interrogation of systems theory from a perspective of curriculum theory, a project that was not enacted in the succeeding 30 years. Now, after decades of the ubiquity of systems in ID and nearly all of culture, we are compelled or even determined to use them. It is difficult or even impossible to imagine curriculum design and ID outside of systematic approaches. We dismiss systems theories and design of C&I at the expense of pedagogical form; hence, at the expense of systematically putting curriculum theory to work. Systems are us.

By retaining the systems design of C&I we can put critical theories to work. The politics of cybernetic systems can be appropriated for a variety of practices as evident in cyberculture. Most importantly, we will retain and embrace systems theory for subversive movements, as Donna Haraway suggested with her cyborgs (Haraway, 1985). Indeed, we ought to think more systemically than ever before and make the reform of C&I systematic. However, we will *not* retain systems approaches as defined in ID, as systems of liberal essences distilled in the 1950s and 1960s. If systems theory is going to have any critical utility at all in the design of C&I, we will have to dispense with the given essences of ID. We have to

dispense with the essential components of ID (Figures 2, 4-5). The notion that certain essences of design or problem solving can be distilled from practice contains its own negation. Just as essences were distilled into ID, other essences, perhaps more important or political, were and still are filtered out (Petrina, 2000b). The essence of the primary step of ID is no more the analysis and determination of needs or objectives than it is disciplinary subjugation or the disenfranchisement of certain groups and knowledge. Recall that the normative models of ID were derived from reified readings of the real or ontological process of ID. I am simply arguing that those ontological readings of ID as either a psychological or social practice were liberally, albeit unwittingly, distorted. Curriculum and instructional designers merely chose the essences that would liberalize ID by making it independent of larger social relations and politics, by investing it with its own liberty. The ID process was politicised from its very genesis – curriculum and instructional designers chose the essences they wanted to choose, essences that were politically effective at the time.

Momentarily, it is important to distinguish between *understanding* C&I and *designing* C&I. Certainly, curriculum theorists demonstrated quite readily that Tyler's rationale and cybernetic essences for *designing* C&I were inadequate to *understanding* C&I. They demonstrated that one could design C&I without understanding the processes and structures underlying C&I, and provided numerous cases to support their arguments. I argue that curriculum studies (Figure 1) ought to be about more than understanding C&I, and ID ought to be about more than designing C&I (Figure 3). Both groups pride themselves on their systemic thinking but systematically exclude the other from practice (e.g., Reigeluth & Garfinkle, 1994). On this, I concur with ID theorists that ID must also be about understanding C&I. This leaves both the design and understanding of C&I to debate.

Without any ontological claim (i.e., ID is really like this), ID is left with a normative claim (i.e., ID ought to be like this), or realpolitik. Hence, ID is left with an argument that is on the surface no better than any other argument for how we ought to design C&I. It is a delusion to say that the ID process is merely a heuristic. Heuristic, model, process, or whatever, the only proof of its efficacy lies in its perpetual use. ID theorists have noted that the ID heuristic, model, principle, or process is reduced to the pragmatic question "does it work?" With their conclusions that it works according to their own criteria of judgement, ID theorists now face the dilemma of tinkering with a model that merely works according to ID criteria, falsely believing that the model

universally works or redesigning models that might prove adequate (Molenda, 1997). Designers of C&I want to deal in mere essences, forms, and processes rather than in the politics of content, knowledge, or identity. It does not matter whether peaceniks are designing C&I for non-violent youth or whether skinheads are designing C&I for neo-Nazi youth, the ID process is the same. Theoretically, the essences or processes of C&I serve each equally well. The only judgements of ID theorists would be on the degree to which means were commensurate with ends. Curriculum and instructional designers prefer that a universal form of ID be appropriate to the design of C&I for the Royal Air Force pilots as well as for first grade phonics. Establishing a general or common curriculum and ID process is a necessary counter to cultures of disciplinary specialisation, but it is important to distinguish between practices in different agencies. Normative designs on C&I in primary, secondary, and most of university education ought to provide, in their essence, politics that respond to an increasingly fragile, globalised world. There is no better time for curriculum theorists to roll up their sleeves and use the pastiche of their postmodernism or the praxis of their critical modernism to provide normative models of ID. In the meantime, ID practitioners continue to engage in the realpolitik of designing C&I, insisting or pretending the essences they chose for ID are universal and that content is outside their jurisdiction (e.g., Kemp, Morrison, & Ross, 1996; Posner & Rudnitsky, 1994; Reiser & Dick, 1996).

It would be foolish to deny that in designing C&I we either individually or socially choose goals or objectives, analyse and organize resources, adopt and develop activities, content and teaching strategies, and put assessment tools to work. The ID process may of course work according to its own logic. However, current normative models for the design of C&I have not, and basically cannot, accommodate our understanding of C&I. Curriculum theory has not responded to the design of C&I and ID has not responded to curriculum theory. Merely re-harnessing the horse of theory to the cart of design is a hopeful endeavour. The freewheeling horse is dizzy from its search for greener pastures. The freewheeling cart is running empty on its fixed, circular track. Are we destined to repeat *ad nauseam* that the more things change (e.g., theory of C&I) the more things stay the same (e.g., design of C&I)? Is it possible that in the very design of C&I, in the very essences of this process, in its very form we accommodate our understanding of C&I? Is it possible, in the design of C&I, to contain what we understand about the mal/practice, mis/appropriation, and

mis/treatment of knowledge, students, and the world in C&I? Can we accommodate understandings generated through curriculum studies concerning alienation and competition; differentiation of expectations; desublimation or immediate gratification of student desires; discipline and disciplinarity; linguistic and semantic prejudice; micro-politics of practices and technologies; normalisation and norms; standardization and standards; oppression and representation of animal and human (class, disability, gender, race, and sexuality) rights in curriculum; streaming or tracking and sorting; or teachers union power?

We might begin by substituting Tyler's and ID's rationales with a critical rationale that is sensitive to our understandings of C&I in a politicised world. Slightly more abstract than Tyler's rationale, this critical rationale involves four sets of questions fundamental to the *understanding* and *design* of both C&I:

1. What and whose world is of most worth? Does this world of abundance and poverty lend itself to common, just representation, understanding, scrutiny and reform? If yes, how ought we publicly represent what we and our students feel and know about this world? If no, ought this world be left to private representations, processes, and forms?
2. What and whose students are of most worth? Do these students lend themselves to a common or core curriculum? If yes, how ought we organize their commonalities and differences? If no, ought these students be left to individualized, independent, and private processes of education?
3. What and whose knowledge is of most worth? Does this knowledge lend itself to public, pedagogical (or andragogical) forms? If yes, how ought we organize it for teaching? If no, ought this knowledge be left to emotive and intuitive processes of the private self?
4. What and whose practices are of most worth? Do these practices lend themselves to critical, public scrutiny and reform? If yes, what evidence of what students learned from these practices will be judged? If no, ought these practices be left to the private processes of self-justification?

Unlike Tyler's and ID's covert politics, these questions are overtly politicised. Like Tyler's and ID's rationale, we can use this critical rationale to understand and design C&I by procedurally and systematically addressing the four sets of questions. We can reduce the rationale to a simplified model (Figure 6):

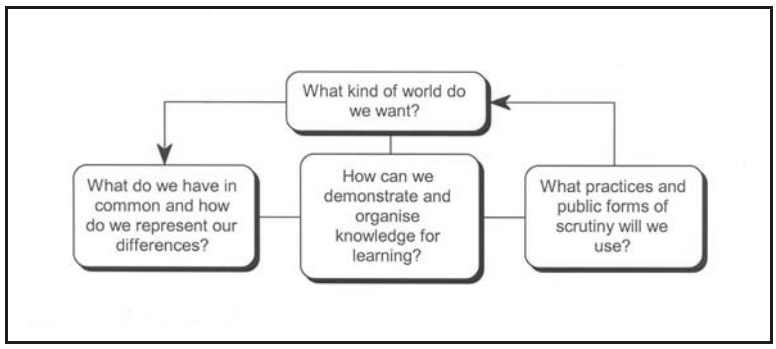

Figure 6. *Critical System of C & I.*

From this critical rationale and simplified model we can derive a more pragmatic, systematic model for the design of C&I. If this is going to have any utility in the realpolitik of C&I it will have to do what current normative models of the design of C&I accomplish and more. The critical rationale and its derivative contain ontological and normative judgements on the design of C&I. Similar to the essences of ID distilled by Gagné and Briggs, judgements are made on psychological and social practices in the design of C&I:

1. Sublimation or focusing of desires and fears
2. Calculation of commonalities, differences, interests, and values
3. Fabrication of needs, goals, or modes of justification
4. Appropriation and organisation of knowledge into curriculum forms
5. Appropriation and re/production of technologies or practices of mediation and re/presentation
6. Communication of intentions
7. Stipulation of conditions for learning, delegations of practices
8. Negotiation of contents and forms of scrutiny.

These essences in systems representation would look a bit less linear (Figure 7). Linearity and circularity were never effective criticisms of systems models, and postmodern and poststructural curriculum theorists never provided an adequate substitute for the design of C&I. Doll's four R's – richness, recursion, relations. and rigour are a start (1993, p. 193). Life in general and the design of C&I in particular do not

work in exact linear or non-linear ways. C&I may be chaotic systems but they are not chaotic by design. If we are to engage in the realpolitik of C&I, then our challenge is to provide affordances and conveyances that do not resort to trite rationalisations that C&I is too chaotic and complex for any designs that are not emergent. If we are to engage in realpolitik we have to show our ID.

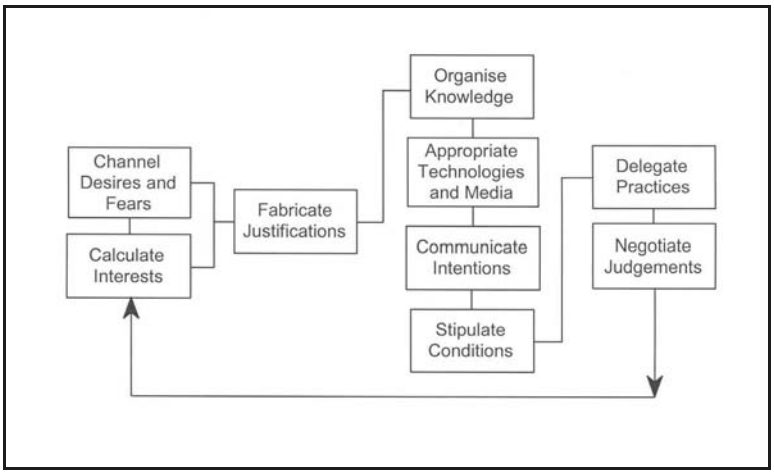

Figure 7. *Critical System of the Design of C & I.*

Critical Problems, Projects, and Units

As is evident at this point, both of our dialectical questions, "what should be learned" and "how should it be organized for teaching?" disclose political discourses about the content and form of C&I. These are not merely questions of economics and pragmatics. I concluded that curriculum theorists prefer the politics of knowledge (the first question) and designers of C&I prefer the realpolitik of form (the second question). One tends toward a politics of "just think about it," the other toward a politics of "just do it." As is also evident, we ought to be dissatisfied with the division of labour between designers and theorists, where engaging in one side of the dialectic above seems sufficient for practice. Practices in the design and theory of C&I dichotomise content and form rather than treat them as dialectical. Obviously, this reinforces a dichotomy created between the design and theory, or practice and theory, of C&I. This dichotomy is reproduced in divisions of labour between designers and theorists, where their labours are uncoordinated. Short of a political agency to coordinate the two, this dichotomy might be re-engaged by

changing the subjects of each. The critical rationale and system for the design of C&I (Figures 6-7) effectively closes conceptual space between content and form, theory and design. In the following sections, I open historical time.

Curriculum theorists have not entirely neglected the design and form of C&I. In fact, disciplinary designs recently received a treatment not seen since the early 1960s. Some of our most productive insights into disciplinarity and its discontents came in the 1990s through comparative curriculum, curriculum history, and the politics of curriculum (Aronowitz, 1991; Goodson, 1992, 1993; Klein, 1996; Peters, 1999; Messer-Davidow, Shumway, & Sylvan, 1993; Petrina, 1998; Popkewitz, 1997; Wraga, 1997). For the most part, the most curriculum theorists could do to respond to disciplinarity was to recommend interdisciplinarity. Without a reconceptualised design of C&I and new political forms of curriculum, interdisciplinary designs in schools remain rare in practice. In the 1990s curriculum theorists also returned to the design of C&I *via* learning theory. Learning and teaching became subjects again for theorists through the psychological practices of constructivism and social cognition (Cole, 1990; Cole & Engestrom, 1993; Lave & Wenger, 1991; von Glasersfeld, 1995). In the mid 1990s, Davis and Sumara enacted a version of situated cognition on the stage of curriculum theory, thereby opening a curtain to the design of C&I (Davis & Sumara, 1997, 2000; Davis, Sumara, & Kiernen, 1996). Learning theory, for a long time the main (and virtually the only) attraction in ID, was now playing on the stage of curriculum theory. Like instructional designers, curriculum theorists managed to scale down disciplines to individual heads in the audience. It was here, on the stage of learning theory, that curriculum theory met ID again, similar to confrontations in the 1960s. Both groups responded to constructivism and situated cognition by taking problems and projects as interesting subjects, a progressive response to be certain. However, both groups also took these designs as mere forms for the reconstruction, or basically the acquisition, of disciplinary knowledge. Those in curriculum studies who actually design C&I remain content to puzzle out details of how disciplinary knowledge of their subject area can be more efficiently or creatively attained (the same effect).

Curriculum theory, if engaged at all with the design of C&I is primarily about disciplines, and ID is primarily about disciplines. Cognition and instruction provide a common stage for curriculum theory and ID, and necessarily direct attention to form and design. Enactivism and situated cognition suggest that neither individuals nor knowledge can

be extracted from social forms, an insight that for a number of reasons resounds with perennial insights of critical theory. Curriculum theory's turn toward design, however uncertain, is especially timely. We have come to realise that design, whether industrial or instructional, is about life styles (Mau, 2001; Petrina, 2000b).

This turn toward design recalls a time when curriculum theorists took interest in the forms of C&I and not merely their contents. In the beginning, at the official dawn of curriculum theory in the 1910s, the design of C&I was inseparable from an understanding of C&I. However much curriculum historians (e.g., Kleibard, 1975, 1992; cf., Wraga, 1998) enjoy grieving over the loss of humanism at the hands of the scientific curriculum making of Franklin Bobbitt (1918, 1924) and Werrett Charters (1923) in the United States, we cannot overlook the fact that they and their ilk were doing what current curriculum theorists do not. They were making the curriculum they were theorising. They readily moved from the politics of curriculum theory to realpolitik of curriculum design. They invented political forms to embody their politics. It is easy but ahistorical to dismiss this time as simple or these folk as rational cons. From the 1910s through the 1950s, in countries such as Canada and the United States, curriculum theorists contrived a range of different designs to contradict and reinforce the power that disciplines held over the whole of educational practice. In the late 1910s and 1920s for example, theorists in Canada and the United States used the politics of progressive education to invent problems, projects, and units to contradict disciplinary designs and their constituent instructional methods of exercise and recitation, or what Kilpatrick (1918, p. 329) called the "customary set-task sit-alone-at-your-desk procedure." Eventually, the politics of disciplines were able to contain the new designs but this was never certain.

John Dewey's work is as good a place as any for initiating a historical reconstruction of relations between curriculum theory and curriculum design. Through his experimental school established in 1896, work in psychology and philosophy and his immensely popular books, Dewey readily demonstrated how inseparable curriculum theory and design were. Dewey did not necessarily reject disciplinary designs inasmuch as he popularised the problem design as a viable form for the embodiment of his curriculum theory. Contradicting classical notions of education as a transmission of cultural inheritances, Dewey theorised that democratic power ought to be invested in curriculum and shared with students. He captured this theory in a problem design, suggesting that students be given freedom to choose and address problems through

a form of purposive planning, reflective inquiry, and transformative action. Epistemologically, this was a curriculum form for constructing and testing knowledge, and axiologically a form consistent with democratic society. Instead of transmitting knowledge or its applications, curriculum form mediated between cultural conventions and the students' everyday inquiries and actions. To his credit, he anticipated that a problem design could provide a politicised curriculum form for democratic theory and the testing of cultural conventions such as racial prejudices. This was its truly subversive characteristic. The movement of scientific reasoning to democratic reasoning was not necessarily a one-to-one correspondence.

However, Dewey waffled between this notion of problems and a formulaic problem-solving model that neatly captured the scientist's essences of scientific methods step for step. In *How We Think* (1910/1933) and *Democracy and Education* (1916, p. 192), Dewey identified the form of the problem design as a politically empty exercise of four or so steps:

1. Identify and understand a problem
2. Devise a plan
3. Execute the plan, suggest, and test solutions, and
4. Reflect to consolidate learning.

Linearity was not the issue, and Dewey suggested that steps were intermingled and simultaneous. Yet instead of emphasising how to contradict cultural conventions, Dewey's emphasis, especially in *How We Think*, was on his liberal notions of how we ought to think (Petrina, 2000b). Along with much of psychology in the 1910s and 1920s, Dewey cast problem solving or cognition as a private, intellectual endeavour. It was relatively easy for disciplinary designs to contain problem solving as private cognition through the 1920s and 1930s. Polya's *How To Solve It*, first published in 1945, truncated again the politics of the problem design to realpolitik and cemented our contemporary notions of problem solving as a process of the private intellect. Edited in 1957 for the cybernetic age, *How To Solve It* institutionalised in disciplinary form the discrete essences Dewey distilled in the 1910s. The few contemporary, radical exceptions to disciplinary problem solving tend to be in subjects such as home economics, where a practical problem could be "what to do about a childbearing decision in the face of limited financial resources?" (Brown, 1978; Hultgren & Wilkosz, 1986, p. 143). By adopting Dewey's general form of problem designs (purposive planning, reflective inquiry, and transformative action) these exceptions

rejected the cybernetic essences of problem solving to embody critical theory.

The case of the problem design demonstrates quite clearly why curriculum form matters. Simply put, the curriculum of purposive planning, reflective inquiry, and transformative action derived from and yielded a different curriculum than

1. Find, Understand, and Represent a Problem
2. Devise a Plan
3. Execute the Plan, and
4. Check the Solution and Reflect to Consolidate Learning.

Dialectician that he was, Dewey should have known better. This was a simple means-ends issue. Means and ends are dialectical. His liberal essences or form of private cognition could never have yielded a public and democratic, yet alone radical, curriculum. Dewey's contemporaries did not overlook this mistake. Kilpatrick (1918, p. 333) insightfully noted that this form easily "lends itself" to "ordinary school-room work." Dewey's interests in the design of problems demonstrated the political import of the form of projects in the 1910s and 1920s for curriculum theorists.

Embedded in the very nature of projects, whether agricultural, domestic, industrial, or sociological, was a subversive element. Without project work, which by definition requires students to dirty their hands, proponents rightfully noted that educational practices in the schools smack of cultural elitism. Theoretically at least, projects contradicted the "regime of coercion" associated with conventional curriculum by embodying the liberty of purpose or volition (Kilpatrick, 1918, p. 334). Projects discharged responsibility to students and in this sense undermined the authority of both teacher and discipline. Projects, in their liberal or radical form, concentrated a considerable amount of power in the students' hands. It was this concentration of liberty and power that received the brunt of criticisms from theorists of disciplinary form. Liberal and radical theory, the critics accurately observed, coddled individual students' desires through an overly sympathetic psychology of motivation and abandoned the design of C&I to the students. Any project the students selected was a project, any form in which it was enacted was project method, and any knowledge incidental to the project was appropriate. William Heard Kilpatrick, radical by his contemporaries' standards, turned this liberal spin on projects, fashioning them into a curriculum design attuned to progressive education. His notion of "The Project Method" was an immediate hit in 1918 and in addition to its mass distribution in the *Teachers College*

Record, 60,000 reprints were sent out (Kleibard, 1985). To Kilpatrick's theoretical disadvantage, he was so vague about specifics of project designs, and waffled about four different types when subsequently asked, that even after 80 years of interpretive power it is nearly impossible to discern exactly what constituted a project in his mind (Bode, 1927, pp. 141-165; Kilpatrick, 1925, pp. 346-350; Waks, 1997). This and what we know about social epistemology and the sociology of culture explain the range of practices in project curriculum design. What he *was* extremely clear about, and what a consensus coalesced around, was the general form of projects (Bossing, 1942, p. 555-593; McMurry, 1920; Stevenson, 1924; Stockton, 1920).

Following Dewey, Kilpatrick (1918, 1921) effectively discharged powers for organizing curriculum to students. If the classical learning process was socialised and teacher directed, beginning with preparation and presentation, and proceeding through drill and recitation, Kilpatrick psychologised this process from an individual student's perspective. The general form of projects, "purposing, planning, executing and judging," was not so much a social form as a psychological form (1918, p. 333). He tried to reform traditional connotations of social projects, such as chicken raising, dressmaking, or census taking, by distilling certain psychological essences of these practices into curriculum form. Even though he put his finger on Dewey's mistake, he more or less reiterated Dewey's essences of problem designs, again resulting in psychological rather than social form (Mickelson, 1987). To give him credit, it was no mean feat to move the project from the factory, farm, home, or office into the school. This curriculum form, however psychologised, took serious theoretical work. Unlike a good many problems that could be resolved in the mind, projects tended to result in a tangible thing and involved a contingent amount of social practice. Purposing, planning, and judging were basically private practices of the students' heads while executing necessarily demanded at least the rudiments of social practice. Kilpatrick mapped Dewey's problem design directly onto projects; a sub-form mapped onto a super-form. Here, the project occupied a larger unit of curriculum and time than the problem. Conceptually speaking, students used their habits of the scientific intellect to solve problems incidental to the completion of their project. Yet even with volumes of rules about what made for an educative project, curriculum theorists wondered why this design was so easily contained by disciplinary designs (Herring, 1921; Kilpatrick, 1921). "The schoolroom subjects do not appeal to the child," one critic candidly admitted in 1921.

> What can be done? Eureka! Use the former [projects] as a means of teaching the latter [subjects]. And it works! How strikingly evident that the "project," "a purposeful act," is used by the teacher as a method – a bait – by which to ensnare the interest of pupils and fasten it, for the time, upon that which he has no normal interest. (Meriam, 1921, p. 390)

The project was easily "debased," "compromised," this critic insisted, "to essentially a *device* for teaching the schoolroom subjects." The same liberal form that made Dewey's problems appealing to disciplinary theorists made projects appealing and containable. The politics of containing this form were also the same.

Containment aside, for Kilpatrick (1918, p. 323), a project undertaken with volition, as opposed to coercion, was the epitome of self-determination and "thus the typical *unit* of the worthy life in a democratic society." For that reason the project should "be made the typical *unit* of school procedure" or "the typical *unit* of instruction." He later defined a project as a "*unit* of purposeful experience" or "*unit* of experience" (Kilpatrick, 1921, pp. 283, 288). Obviously, when he referred to a project as a *unit* of life or experience – a part, piece, or slice of significant features of life – he invested the form with some fairly heavy theoretical work of Dewey who suggested that education was not merely the preparation for life but was life. The curriculum form embodied the theory. I emphasized "unit" here because it was units that, over the long haul and more so than projects, became mundane, everyday practice in C&I. Kilpatrick was ambivalent about the term "project," but not its form, and this in itself left its alternation with the term "unit" to initially a matter of preference. For example, his Columbia University colleagues Gordon Bonser and Lois Mossman interchangeably used unit, "unit of work" and project in their designs on C&I (Bonser & Mossman, 1923). They cast the theoretical weight invested in problems and projects on units, and on activities in general. The common denominator was the *unity* within the students' heads and hearts in the general form of purposing, planning, executing, and judging (Ashley, 1938; Harap, 1937). Units, however, signified a different, hybrid form by the late 1920s.

In the mid 1920s, Henry Morrison (1926, 1931) combined the initial notion of unit (i.e., unit of experience) with disciplinary notions for his practices in the secondary school at the University of Chicago. Here, unit meant a large block of related subject matter, which provided a theme, combined with activities, problems, and projects over several weeks to generate understandings of the theme and constituent

knowledge. For example, Morrison used themes such as the French Revolution in history, and the Earth as a Planet in science. Morrison fairly disposed of the psychological form of projects, and basically its politics of individuality, and cast this larger "thematic" unit in a social form. Where the curriculum designer could not design a project, by definition, a unit had to be designed, by definition. The essential form of a unit was now:

1. Exploration – teacher explores what students know through pre-test and discussion
2. Presentation – teacher provides a concrete sketch of the unit and theme
3. Assimilation – students scatter for individualised and small-group work; teacher evaluates
4. Organisation – teacher organizes knowledge, represents unit and theme
5. Recitation – students demonstrate attitudes, knowledge, and skill; public performances. (Morrison, 1926, pp. 231-316; 1931, pp. 256-338)

While Morrison, like Kilpatrick, wanted the term unit to denote "the external things-to-be-learned," or a "comprehensive and significant aspect" of culture, connotations of the unit signified a form (1931, p. 24). The unit, like the textbook designed to reinforce disciplinary designs, was a curriculum form that could be designed well in advance of its use. Rather than the generalised, unified understandings that were developed as a result of this curriculum design, or the thing to be learned, unit meant the curriculum thing – the selection and grouping of subject matter. Morrison and other theorists were endlessly frustrated over this commodification. For example, one sympathetic theorist insisted that a unit is:

> Distinctly not a formula, it is not a 'method,' it is not a 'technique.' It is a theory of education. The methods and techniques based upon it are important, but they are not the conception .... In some places the terminology of the new conception is being used with little genuine understanding. There has been prolific production of 'units,' meaning often collections of subject matter. The old stereotypes of ground-to-be-covered, testing for facts, grading on the basis of memory and skill, still appear in situations where the unit is said to be in operation. This is, of course, a fundamental contradiction. (Burton, 1933, p. 213)

If at one time units might have threatened the collusion of disciplines and textbook publishers, by the early 1930s the proliferation of units as subject matter was a commercial endeavour. Mossman (1934, pp. 4-5),

theorist of units and the activity curriculum in general, regretted the staggering proportions of this problem. She noted that in the public schools of Raleigh, the capital city of North Carolina, there were 1,602 units on file, and 1,240 were on file in New York in 1933 (Steininger, 1959, pp. 28-29). By this time, units were packets of subject matter that were bought and sold in somewhat of an unrestrained market. Curriculum was reduced to shopping, critical theorist Ruth Streitz argued in the late 1930s.

> Blind following of dictates, regardless of their sources, caused many teachers to buy ready-made units of work. The result was a mail-order business with the buyer having no idea as to the purpose and function of his [sic] purchases in relation to his particular group. It was just as easy to order a unit ... as it is to order a can of peas or a can of pineapple by a number which indicates content. (1939, p. 258)

But she was more concerned with the politics of the contents of units than the fact that this form was commodified or canned.

> Not only has the sale of canned 'units' been lucrative but some groups have controlled their content as well. Topics which might lead children to question certain political and economic practices prevalent in the adult world of today have been omitted: 'unfairness to workers,' 'amassing fortunes at others' expense,' 'selling goods known to be inferior by taking advantage of others' ignorance,' 'extensive advertising of goods calling attention to certain supposed good qualities to obscure the harmful ones,' 'refusal to admit historical data that might lead children to question certain patriotic traditions,' 'consideration of minority groups with rights and privileges based not upon numbers or forces but upon the right of every individual to order his own life within the social structure.' The reasons for omissions are too obvious to need elaboration. (Streitz, 1939, pp. 258-259)

Too obvious indeed. Between 1929 and 1939, a series of Harold Rugg's textbooks threatened the established ideologies of free enterprise and democratic government. Rugg's social studies textbook, *Man and His Changing Society*, was condemned as a threat to American values for criticisms of the economic and social systems in the United States. The response was fierce in public book burnings and bans in school districts, such as in New York City in 1941 (Petrina, 2002, p. 93).

To be certain, critical theorists produced books and units with critical contents. For example, these unit themes were suggested in 1952: "How can we detect propaganda in the news?," "From slave to free man [sic]," "Crime and punishment," "Marriage and the family in our

industrial civilization," "What are the facts about our foreign policy?," "Big government, big business, and big labor" (Burton, 1952, pp. 330-335). But theorists responded with an interrogation of the form of units as well.

The "normative unit" was contrived to help students "develop discipline in dealing with conflicting loyalties and perspectives" and to contradict the disciplinary units "now developed around the search for facts." By definition, a normative unit offered a form for addressing "those unsettled situations in which people are divided over loyalties and social goals. It deals with situations in which the ends are uncertain, confused, or in conflict." "In other words, the issues studied in a normative unit involve relations among persons – among their interests, attitudes, conceptions, and modes of thought" (Smith, 1945, p. 219). Normative units derived their content from social practices that were necessarily controversial – "social equality, economic opportunity, political liberty" or "race relations" – and their form from theories of democratic conflict resolution popular in social psychology at the time (p. 226). Curriculum theory was designed into the form of a week-long unit:

1. "social-moral orientation of oneself and others,"
2. "sympathetic recognition of opposing positions," practices and policies, or fact finding,
3. "conscious recognition and criticism of [personal] motives, aspirations, beliefs and outlooks,"
4. presentation of personal and social views, and
5. resolution or fusion of "social directions and standards of judgement" with "facts and descriptive principles into programs and plans of action." (Smith, 1945, pp. 227-228)

The very form of the unit was designed to discourage fence sitting: "Neutrality and apathy are signs that the student's normative ideas have not been touched by the unit" (p. 227). In its form, curriculum derived as much from the students' lived experience as from the teachers' critical selection. Through this form and the teachers' critical selection of activities, normative units held a possibility for providing insight into the politics of controversial educational issues such as capitalism, class, gender, labour, race, and war. Political tension and resolution were built into the curriculum form (Figure 8).

There were other politics underwriting the normative unit as well. Theorists wanted to tilt the tables of curriculum design from textbook publishers and commercial unit vendors back to educators. Textbook publishers by the late 1930s were using the subject matter notion of

unit to replace the concept of a chapter or group of chapters. A chapter on evolution in a biology textbook became a unit on evolution in high schools.

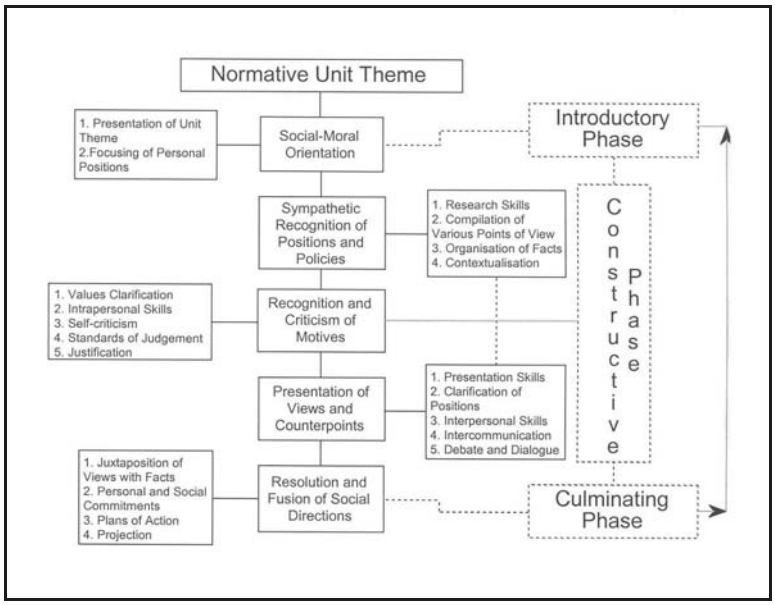

Figure 8. *Normative Unit Model.*

It was strictly semantics. In this case, the unit was canned and contained within a disciplinary design. Elementary school teachers took to an alternative politics of the unit much more readily than secondary school teachers who, in most subjects, were dependent on textbooks. A week or a two week long thematic unit that revolved around a range of activities was much more difficult to can or contain than a textbook or printed unit of subject matter. Curriculum design was a problem of scale as well as form. Units and their form are more crucial to the politics of C&I than we have acknowledged. Disciplines and centralised curriculum design cannot be displaced by appeals to interdisciplinarity and alternative textbooks. The appeals are empty and textbooks too easily contained without attending to the issues of form and scale. While we can find numerous references to canned and textbook units today, there are few in curriculum and instructional design that attend to the theory and realpolitik of units. Contemporary theorists of unit designs advocate the general form of Morrison's units and liberal essences found

in ID (Figure 9) (Ogletree, Gebauer, & Ujlaki, 1980; Posner & Rudnitsky, 1994; Stewart, 1983).

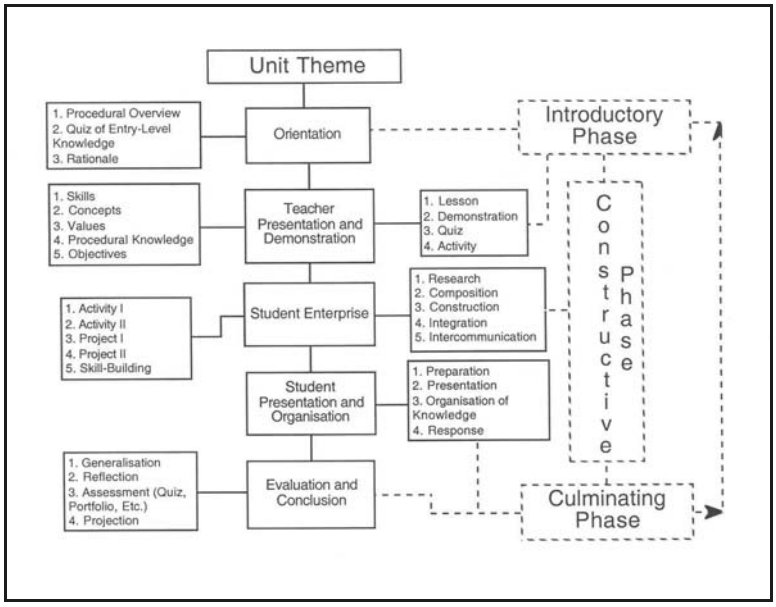

Figure 9. *Generic Unit Model*.

Critical Modules

At the dawn of the 1960s, the Cold War in North America was entering the second decade of its full career, and education was on the defence. A series of polemical indictments of schooling in the United States published in the mid to late 1950s, such as Bestor's *Educational Wastelands* and *The Restoration of Learning* and Vice Admiral Hyman Rickover's *Education and Freedom,* championed disciplinary knowledge and intellectual training. Bruner published *The Process of Education* in 1960. In this small book of less than 100 pages was an outline of a theory for disciplinary designs, an idea which would quickly become enormously influential as a "curriculum manifesto" (Pinar, et al., 1996, p. 159). Bruner argued that academic disciplines exhibited an innate structure, which held the key to choosing and organizing what to teach. Two influential supporters of Bruner's ideas published papers in 1962. Schwab published "The Concept of the Structure of a Discipline" and Phenix "The Use of the Disciplines as Curriculum Content" (Schwab,

1962, 1964; Phenix, 1962). Several major texts were published by the mid 1960s, including King & Brownell's *The Curriculum and the Disciplines of Knowledge*. "Select what to teach from the disciplines" and "organize it through disciplinary designs" was the doctrine of the time. By 1963, the disciplines were canonised as the most logical curriculum design (Efland, 1988; Pinar, et al., 1996, pp. 168-177). Indeed, "disciplinary doctrine" and subjugation held that "the chief if not the sole criterion for including any subject in the school curriculum is whether that subject is recognised as an academic discipline" (Tanner & Tanner, 1989, p. 341). Although ID theorists claimed neutrality, ID was established in this context to basically work out the details for disciplinary designs on C&I. Some say ID was established at this time to teacher-proof the disciplinary curriculum.

Disciplinary doctrine was re-established amidst student protests and near anarchist reactions to the irrelevance of isolating disciplines and disintegrating knowledge in the 1960s in countries such as the United States. Bruner, Phenix and Schwab rethought their original ideas by the late 1960s. Bruner (1971, p. 19), called for a moratorium on disciplinary designs. Phenix retracted his ideas by concluding that disciplinary studies tend toward "a sense of academic irrelevance" (1969, p. 13). Schwab dismissed the "abstracted, idealised" nature of disciplinary knowledge and its foundation to bad "habits of the academic community" (1969, p. 225). These educators reiterated a profound alienation from the pervasive and often oppressive practices of this curriculum form. Out of this context, one curriculum theorist noted, "a new curriculum 'star' appeared on the educational horizon – the minicourse" (Oliver, 1978, p. 3).

The minicourse was not entirely revolutionary by 1960s standards, but it did provide an alternative curriculum form in the schools, if only for a decade or so. The academic notion that a course could be broken into discrete entities and lengths of two weeks, one week, or even one day was instutionalised at Purdue University in the mid to late 1960s. At Purdue, students in botany and zoology, for example, were provided with self-contained course packets and audiovisual materials to complete subtopics in cell mitosis and meiosis on their own time at any point in the term. Upon passing a range of these minicourses, the students were given credit for the full courses. Minicourses common to several courses were applicable to all of the courses. Purdue's minicourses followed a basic format of "modular teaching:"

1. Communication of objectives,

2. Presentation of content through readings and audiovisual materials,
3. Organisation of knowledge through practice (problem-solving, workbooks, etc.), and
4. Assessment by test. (Postlethwait, 1969; Postlethwait & Hurst, 1971, p. 18)

A practice of self-instruction already 50 years old, Purdue merely introduced an additional degree of flexibility to accommodate their students' lifestyles. This flexibility, with an increasing accessibility, built into the curriculum was based on the same liberalities of broadcast educational radio and television, and the Open University of the United Kingdom, which "opened its doors" in 1971 (Theodossin, 1980). "Modular teaching" and "free-form" education, the basic ID form and liberality of minicourses at Purdue and similar institutions, marked the form of Open University (OU) courses as well.

In the early 1970s, public schools in Canada and the United States embraced the liberality of minicourses (i.e., freedom of choice and sequence, local interests, and knowledge) but rejected their canned, disciplinary form. "Free-form" characterised minicourses in the school. As one minicourse advocate explained, the "free-form approach intends to offer students, faculty, and community members an opportunity to plan together and to participate in short explorations of areas that may be adjunct or actually outside the conventional program of studies." "Free-form courses are usually short, often intensive, investigations of a particular aspect of a subject area or brief overview of subject-matter outside the traditional curriculum" (Oliver, 1978, p. 22). Minicourses contradicted disciplinary doctrine by providing students and teachers with a form for exploring knowledge not contained by the disciplines. The curriculum form of minicourses was "free-form" – in theory, organic to the knowledge at hand. Minicourses were established well outside of disciplinary boundaries, and addressed "everything from fly-fishing to the philosophy of Karl Marx" (p. 5). Typical minicourse titles in schools surveyed in the mid 1970s included: "Are you a revolutionary or merely revolting?," "Backpacking," "Black history and culture," "Body talk," "Don't be stuck up anymore: Drug Therapy," "Economic survival," "Is God dead?," "literature of the occult," "R. Buckminster Fuller, or how to use your dome," "rock poetry," "Venereal disease," and "Women and liberation." By 1972, about one-third of the high schools and one-fifth of junior high schools in the United States were offering minicourses (Glathorn, 1975; Oliver, 1978, p. 33). One administrator commented on minicourses in her school, capturing the feelings of the times: "On

minicourse day attendance is up. No one is going to the bathroom or to drinking fountains. Maybe they are trying to tell us something" (Oliver, 1978, p. 126). Where disciplinary doctrine shaped a "teacher-proof curriculum," free-form and minicourses wrought a "curriculum-proof teacher" (Romey, 1973).

Of course, free-form was no form as far as ID was concerned. ID theorists wanted to reign in minicourses and modular teaching by casting all of individualised curriculum into the form of instructional modules. The general liberality and psychology of modular teaching at Purdue and the OU – active student involvement, clear objectives, discrete units of knowledge, small, sequenced steps, self-pacing, flexibility, and portability– was pretty much the fruit of the previous decade's work of programmed instruction in ID. By the 1970s, the individualised learning package or container for modular teaching was a module – "a self-contained, independent unit of a planned series of learning activities designed to help the student accomplish certain well-defined objectives" (Goldschmid & Goldschmid, 1972; Kapfer & Ovard, 1971, p. 2; Klingstedt, 1971, p. 73). Minicourses became modules for administrators looking to place some constraints on their school's free-form curriculum. Modules were initially intended to be a form for the design of C&I by teachers, and intended to raise the bar of "design as you teach" or "redesign on the spot" lessons. However, under a "modular system," ID provided teachers with pre-designed modules (Gagné & Briggs, 1974, pp. 33, 269-275). A module captured the sequenced steps of modular teaching in a discrete form (Burns, 1973; Hashim, 1999; Heinich, Molenda and Russell, 1985; Klingstedt, 1971; Russell, 1974):

1. Objectives
2. Pre-test
3. Rationale
4. Learning activities (Path through audiovisual or multimedia materials)
5. Post-test
6. Resources.

One student remarked on the modules in the mid 1970s: "You know I hate it, but I do several of these learning packages every day" (Glathorn, 1975, p. 96).

This form of ID essences and liberality has existed unchanged since the early 1970s, and like canned units, proliferated in commercial production during the 1980s and 1990s (Reed, 2001). In subject areas such as technology education, the popularity of modular teaching increased throughout the 1990s. Currently, in the United States, 72.5%

of technology education programs in public schools use teacher-made modules and 48.5% use commercially vendored modules (Sanders, 2001). During the 1990s, the commercial production of modules became an attractive endeavour for vendors who marketed their curriculum at prices ranging from $8.00 for a paper packet to $12,980.00 for integrated learning systems (Noble, 1993; Petrina, 1993). In the late 1980s and through the 1990s, modules became immensely popular in England and Scotland in a context of "flexible learning," educators' response to neo-liberal and flexible economics (Nikolova & Collis, 1998, p. 59; Raffe, 1994). One proponent of modularity referred to this proliferation in higher education as "The Container Revolution," reflected in the 700+ modules at his institution, Oxford Polytechnic (Watson, 1989, pp. xvii, 1). Modules are currently a world-wide phenomenon and the preferred containers for distance education *via* the world wide web (Bourdeau & Bates, 1997; Hashim, 1999).

We need not be bull theorists in the ID china shop, but this strikes me as a time to at least tamper with the form of modules. ID theorists might respond by saying that "liberal forms are appropriately blind to the politics of knowledge. Modules respond to any politics equally well. Modules don't teach people. People teach people." And so on. Yet as I demonstrated, theorists of problems, projects, units, and modules knew all too well that politics were and could be designed into the form of curriculum. Politics did not merely mark the latent and manifest contents of books. The very forms of books and other curriculum have politics (Petrina, 2002). Knowing this, how might our critical rationale and system (Figures 6-7) configure a modular form? What form might a critical module take? A critical module is defined as a reasonably self-contained, normative unit of media and text designed to provide a student with a critical perspective on a given subject or theme. A critical module takes the general form of:

1. Framing Instigations – State several critical, provocative questions, thoughts, or methods
2. Intentions and Positions – State your intentions, counterpoints, and positions on the subject
3. Key Concepts and Contexts – Provide a conceptual and contextual menu or map
4. Interactivities – Configure a network, system, or story that is critical, lively, and instructive
5. Verifications – Provide a way to scrutinise what is judged, known, and questionable

6. Connections – Provide the links that connect private with public knowledge.

The Fugue (Condition) of C&I

I began with two basic problems of C&I: "What should be learned?" and "How should it be organized for teaching?" I argued that these problems were dialectical in that by deconstructing one we find the other. I argued that curriculum theorists love the politics of "What should be learned?" (politics of content or knowledge) but loathe the politics of "How it should be organized for teaching" (realpolitik of form). On the other hand, instructional designers detest the politics of "What should be learned?" but specialize in "How it should be organized for teaching." These passions, this division of labour, are a recent historical accomplishment. I closed conceptual space between curriculum theory and ID by forming a critical rationale and system that contradicts a barrier (Tyler's rationale and system) that was placed between designers and theorists. I argued that the work of proto-curriculum theorists of the 1920s to1950s was instructive in that the forms of curriculum they produced embodied the theories they produced. There was a time, when designers and theorists were one – curriculum workers clouded their heads with the politics of theory *and* dirtied their hands with the realpolitik of design. Through the cases of problems, projects, units, disciplines, and modules I demonstrated that our protagonists neither fully made the curriculum they wanted nor wanted the curriculum they made. Such is education. Such is politics. Such is history. Yet to throw up our hands, embrace theory and leave the design of education to fate is to leave the design of education to those who take realpolitik seriously (Apple, 2000). The form of reform matters.

In terms of politics, curriculum theorists are content with their curriculum as rogue or vogue text. Here, curriculum texts are amo(u)rphous, scamp-like, or mischievously playful and harmless. Curriculum texts are fashionable, showy, trendy devices. In terms of realpolitik, designers of C&I are content with their curriculum as fugue text. Curriculum as fugue is a condition in which an individual is immersed in strange surroundings and eventually re-emerges unaffected with an intact personality but no memory of the immersion, unchanged with no memory of the curriculum (Morrison, 1931, pp. 23-24). More than we like to admit, disciplinary curriculum is not very memorable. But curriculum as fugue has a second meaning, and it is in this meaning that designers and theorists find common ground. Here, curriculum is a polymorphous arrangement in which a theme is stated,

sequentially repeated, and imitated in counterpoint. Curriculum is *formed* as a delicate balance between fugues. Curriculum that is *not* polymorphous, that is amorphous, mono-morphous or uniform, disciplinary, stimulates the fugue condition. Curriculum without counterpoint, without contrapuntal forms, without tension, without critical forms that contradict disciplines, amorphous theory, is the *status quo* of C&I.

C&I is about real politics *and* realpolitik. To change the *status quo* of educational practice, curriculum theorists will have to dirty their hands with realpolitik and instructional designers will have to clutter their heads with theory. Each will have to switch registers, toggle between political duties and parties, if only for an education. This much we know for sure. Who will respond if we, and that would be the collective we not the royal we, placed an advertisement in the classifieds?

Political Parties

Tired of the same old C&I?

- Are you tired of instruction(s)?
- Are you tired of careerism – of *running* for the low office of instructional designer?
- Are you tired of worrying about sweeping up after the disciplines?
- Then consider the politics of curriculum theory. Our political party will suit you.
- Trust me.

- Are you tired of curriculum(s)?
- Are you tired of currere(ism) – of *running* for the high office of curriculum theorist?
- Are you tired of dreaming about sweeping up after the disciplines?
- Then consider the realpolitik of ID. Our political party will suit you.
- Trust me.

*For information, fast-forward your vita to:
The-future@education.com

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NOTE

1. Granted, these histories and current states of curriculum studies and ID are simplified and much is generalised from Canada and the United States (Pinar, Reynolds, Slattery, & Taubman, 1996; Popkewitz, 2000; Wraga, 1998). The kernel of truth here nonetheless suffices for my argument.

REFERENCES

Apple, M.W. (1973). The adequacy of systems management procedures in education and alternatives. In A. Yee (Ed.), *Perspectives on management systems approaches in education* (pp. 3-31). Englewood Cliffs, NJ: Educational technology Publications.

Apple, M.W. (2000). Can critical pedagogies interrupt rightist politics? *Educational Theory,* **50**(2), 229-254.

Aronowitz, S. (1991). The punishment of disciplines. In S. Aronowitz & H.A. Giroux (Eds.), *Postmodern Education* (pp. 136-156). Minneapolis: University of Minnesota Press.

Ashley, L. (1938). This thing called "method" – II. *Industrial Arts and Vocational Education*, **27**(4), 133-136.

Beyer, L. & Apple, M. (Eds.). (1988). *The curriculum: Problems, politics, and possibilities.* New York: State University of New York Press.

Bobbitt, F. (1918). *The curriculum*. Boston: Houghton Mifflin.

Bobbitt, F. (1924). *How to make a curriculum*. Boston: Houghton Mifflin.

Bode, B. (1927). *Modern educational theories*. New York: Macmillan.

Bonser, F.G. & Mossman, L.C. (1923). *Industrial arts for elementary schools*. New York: Macmillan.

Bossing, N. (1942). *Progressive methods of teaching in secondary schools*. New York: Houghton Houghton-Mifflin.

Bourdeau, J. & Bates, A. (1997). Instructional design for distance learning. In S.N. Dijkstra, F. Seel, F. Shott, & R.D. Tennyson (Eds.), *Instructional design: International perspectives* (pp. 369-397). Mahwah, NJ: Lawrence Erlbaum.

Bowker, G. (1993). How to be universal: Some cybernetic strategies, 1943-70. *Social Studies of Science,* **23**(2), 107-127.

Brown, M.M. (1978). *A conceptual scheme and decision-rules for the selection and organization of home economics content*. Madison, WI: Department of Public Instruction.

Bruner, J. (1960). *The process of education.* New York: Vintage Books.

Bruner, J. (1971). *The process of education* revisited. *Phi Delta Kappan,* **53**(1), 18-21.

Burns, R. (1973). An instructional module design. In P. Kapfer & M. Kapfer (Eds.), *Learning packages in American education* (pp. 61-68). Englewood Cliffs, NJ: Educational Technology Publications.

Burton, W.H. (1933). The unit concept in learning: An attempt at simple explanation. *Educational Outlook*, **7**(4), 206-213.

Burton, W.H. (1952). *The guidance of learning activities*. New York: Appleton-Century-Crofts.

Charters, E.W. (1923). *Curriculum construction*. New York: Macmillan.

Cole, M. (1990). Cognitive development and formal schooling. In L. Moll (Ed.), *Vygotsky and education* (pp. 89-110). Cambridge: Cambridge University Press.

Cole, M. & Engestrom, Y. (1993). A cultural-historical approach to distributed cognition. In G. Salomon (Ed.), *Distributed cognitions* (pp. 1-46). Cambridge: Cambridge University Press.

Davis, A.B. & Sumara, D. (1997). Cognition, complexity and teacher education. *Harvard Educational Review*, **67**(1), 105-125.

Davis, A.B. & Sumara, D. (2000). Curriculum forms: On the assumed shapes of knowing and knowledge. *Journal of Curriculum Studies*, **32**(6), 821-845.

Davis, A.B., Sumara, D. & Kiernen, T. (1996). Cognition, co-emergence and curriculum. *Journal of Curriculum Studies*, **28**(2), 151-169.

Deever, B. (1996). If not now, when? Radical theory and systemic curriculum reform. *Journal of Curriculum Studies*, **28**(2), 171-191.

Dewey, J. (1916). *Democracy and education*. New York: Macmillan.

Dewey, J. (1933). *How we think*. New York: Heath. (Original work published 1910)

Dick, W. & Carey, L. (1978). *The systematic design of instruction*. Dallas: Scott, Foresman and Company.

Doll, W. (1993). *A postmodern perspective on curriculum*. New York: Teachers College Press.

Eisner, E.W. (1979). *The educational imagination: On the design and evaluation of school programs*. New York: Macmillan.

Eisner. E.W. & Vallance, E. (Eds.). (1974). *Conflicting conceptions of curriculum*. Berkeley: McCutchan.

Efland, A. (1988). How art became a discipline. *Studies in Art Education,* **29**(3), 262-274.

Eraut, M. (1967). An instructional systems approach to course development. *Audiovisual Communication Review,* **15**(1), 92-101.

Fox, R. (1962). The sources of curriculum development. *Theory into Practice*, **1**(3), 204.

Gagné, R. & Briggs, L. (1974). *Principles of instructional design*. New York: Holt, Rinehart and Winston.

Galison, P. (1994). The ontology of the enemy: Norbert Wiener and the cybernetic vision. *Critical Inquiry,* **21**, 228-267.

Gerlach, V.S. & Ely, D. (1971). *Teaching and media: A systematic approach*. Englewood Cliffs, NJ: Prentice Hall.

Glathorn, A. (Ed.). (1975). *Alternatives in education: Schools and progress*. New York: Dodd, Mead and Company.

Glasersfeld, E., von. (1995). A constructionist approach to teaching. In L.P. Steffe & J. Gale (Eds.), *Constructivism in education* (pp. 3-15). Hillsdale, NJ: Lawrence Erlbaum.

Goldschmid, B. & Goldschmid, M. (1972). Modular instruction: Principles and applications in higher education. *Learning and Development*, **3**(8), 4-6.

Goodson, I. (1992). On curriculum form: Notes toward a theory of curriculum. *Sociology of Education,* **65**(1), 66-75.

Goodson, I. (1993). *School subjects and curriculum change* (3rd ed.). London: Falmer Press.

Habermas, J. (1971). *Knowledge and human interests*. Boston: Beacon Press.

Harap, H. (1937). The organization of the curriculum. In Joint Committee on Curriculum (Ed.), *The changing curriculum* (pp. 74-88). New York: D. Appleton-Century.

Haraway, D. (1985). A Manifesto for cyborgs. *Socialist Review* **15**(2), 65-107.

Hashim, Y. (1999). Are instructional design elements being used in module writing?. *British Journal of Educational Technology*, **30**(4), 341-358.

Heinich, R., Molenda, M., & Russell, J. (1985). *Instructional media and the new technologies of instruction.* New York: Wiley.

Herrick, V.E. (1950). Concept of curriculum design. In V.E. Herrick & R. W. Tyler (Eds.), *Toward improved curriculum theory* (pp. 37-50). Chicago: University of Chicago Press.

Herrick, V.E. (1957). Design of the curriculum. *Review of Educational Research*, **27**(3), 270-276.

Herring, J. (1921). Criteria of the project. *Teachers College Record*, **22**(4), 329-333.

Herschbach, D.R. (1989). Conceptualizing curriculum change. *Journal of Epsilon Pi Tau*, **15**(1), 19-27.

Hlynka, D. & Belland, J.C. (Eds.). (1991). *Paradigms regained*. Englewood Cliffs, NJ: Educational Technology Publications.

Hultgren, F. & Wilkosz, J. (1986). Human goals and critical realities. *Journal of Vocational Home Economics Education,* **4**(2), 135-151.

Jackson, P. (1993). (Ed.). *Handbook of research on curriculum*. New York: Macmillan.

Johnson, M. (1968). Definitions and models in curriculum theory. In E. Short & G. Marconnit (Eds.), *Contemporary thought on public school curriculum* (pp. 42-50). Dubuque, IA: W.C. Brown.

Joyce, B. & Weil, M. (1980). *Models of teaching* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Kapfer, P. & Ovard, G. (1971). *Preparing and using individualised learning packages*. Englewood Cliffs, NJ: Educational Technology Publications.

Kashope-Wright, H. (2000). Nailing jell-O to the wall: Pinpointing aspects of state-of-the-art curriculum theorizing. *Educational Researcher,* **29**(5), 4-13.

Kaufman, R. (1968). A system approach to education: Derivation and definition. *Audiovisual Communication Review*, **16**(4), 415-425.

Kemp, J., Morrison, G., & Ross, S. (1996). *Designing effective instruction*. Upper Saddle River, NJ: Prentice Hall.

Kilpatrick, W. (1918). The project method. *Teachers College Record*, **14**(4), 319-335.

Kilpatrick, W.H. (1921). Introductory statement. *Teachers College Record*, **22**(4), 283-288.

Kilpatrick, W.H. (1925). *Foundations of method*. New York. Macmillan.

Kleibard, H.M. (1975). The rise of scientific curriculum making and its aftermath. *Curriculum Theory Network,* **5**(1), 27-38.

Kliebard, H.M. (1985). What happened to American schooling in the first part of the twentieth century? In E. Eisner (Ed.), *Learning and teaching the ways of knowing, 84th yearbook of the National Society for the study of education, Part II* (pp. 1-22). Chicago: University of Chicago Press.

Kleibard, H.M. (1992). *Forging the American curriculum: Essays in curriculum history and theory*. New York: Routledge.

Klein, J.T. (1996). *Crossing boundaries: Knowledge, disciplinarities, and interdisciplinarities*. Charlottesville: University Press of Virginia.

Klingstedt, J.L. (1971). Developing instructional modules for individualized learning. *Educational Technology*, **11**(10), 73-74.

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Messer-Davidow, E., Shumway, D. & Sylvan, D. (Eds.). (1993). *Knowledges: Historical and critical studies in disciplinarity*. Charlottesville: University Press of Virginia.

Martin, J.R. (1994). The new problem of curriculum. *Synthese*, **94**, 85-104.

Mau, B. (2001). *Life style*. New York: Phaidon.

Mauch, J.A. (1962). A systems analysis approach to education. *Phi Delta Kappan,* **43**(2), 267-275.

Mazza, K. (1982). Reconceptual inquiry as an alternative mode of curriculum theory and practice. *Journal of Curriculum Theorizing*, **4**(2), 5-89.

Meriam, J.L. (1921). Review of *The elementary school curriculum* by F. G. Bonser. *Journal of Educational Research*, **3**(5), 389-390.

McMurry, C. (1920). *Teaching by projects*. New York: Macmillan.

McNeil, J.D. (1981). *Curriculum: A comprehensive introduction*. Boston: Little, Brown and Company.

McWilliam, E. & Taylor, P.G. (1998). Teacher im/material: Challenging the new pedagogies of instructional design. *Educational Researcher*, **27**(8), 29-35.

Merrill, D. (Ed.). (1971). *Instructional design: Readings*. Englewood Cliffs, NJ: Prentice Hall.

Mickelson, J.M. (1987). The evolving concept of general method. *Theory Into Practice*, **26**(special issue), 402-407.

Miel, A. (1964). Reassessment of the curriculum – Why?. In D. Huebner (Ed.), *A reassessment of the curriculum* (pp. 9-23). New York: Teachers College Press.

Molenda, M. (1997). Historical and philosophical foundations of instructional design. In R. Tennyson, F. Schott, N. Seel, & S. Dijkstra (Eds.), *Instructional design: International perspectives, volume 1* (pp. 41-53). Mahwah, NJ: Lawrence Erlbaum.

Morrison, H.C. (1926). *The practice of teaching in the secondary school*. Chicago: University of Chicago Press.

Morrison, H.C. (1931). *The practice of teaching in the secondary school* (2nd. ed.). Chicago: University of Chicago Press.

Mossman, L.C. (1934). Statement of the problem. In G.M. Whipple (Ed.), *The activity movement*, 33rd yearbook of the National Society for the Study of Education, part II (pp. 1-8). Chicago: University of Chicago Press.

Nikolova, I. & Collis, B. (1998). Flexible learning and design of instruction. *British Journal of Educational Technology*, **29**(1), 59-72.

Noble, D. (1993). Integrated learning systems: The educational engineer meets Wayne's world. *ReThinking Schools*, **8**(2), 14-15.

Ogletree, E.J., Gebauer, P. & Ujlaki, V.E. (1980). *The unit plan: A plan for curriculum organizing and teaching*. Washington, DC: University Press of America.

Oliver, A. (1978). *Maxi-mizing mini-courses: A practical guide to a curriculum alternative*. New York: Teachers College Press.

Ornstein, A. (1984). Curriculum contrasts: A historical overview. *Phi Delta Kappan*, **63**(6), 404-408.

Peters, M. (Ed.). (1999). *After the disciplines: The emergence of cultural studies*. Westport, CT: Bergin and Garvey.

Petrina, S. (1993). Under the corporate thumb: Troubles with our MATE (Modular Approach to Technology Education). *Journal of Technology Education*, **5**(1), 81-89.

Petrina, S. (1998). Multidisciplinary technology education. *International Journal of Technology and Design Education*, **8**(2), 105-138.

Petrina, S. (2000a). The politics of technological literacy. *International Journal of Technology and Design Education,* **10**(2), 181-206.

Petrina, S. (2000b). The political ecology of design and technology education: An inquiry into methods. *International Journal of Technology and Design Education*, **10**(3), 207-237.

Petrina, S. (2002). Getting a purchase on "The School of Tomorrow" and its constituent commodities: Histories and historiographies of technologies. *History of Education Quarterly*, **42**(1), 75-111.

Phenix, P. (1962). The use of the disciplines as curriculum content. *The Educational Forum,* **26**(3), 273-280.

Phenix, P. (1969). The moral imperative in contemporary American education. *Perspectives on Education,* **2**(2), 6-13.

Pinar, W.F. (1975a). (Ed.), *Curriculum theorizing: The reconceptualists*. Berkeley: McCutchan

Pinar, W.F. (1975b). Sanity, madness and the school. In W. Pinar (Ed.), *Curriculum theorizing: The reconceptualists* (pp. 359-383). Berkeley: McCutchan.

Pinar, W.F. (1988). (Ed.). *Contemporary curriculum discourses*. Scottsdale, AZ: Gorsuch, Scarisbrick.

Pinar, W.F. (1994). *Autobiography, politics and sexuality: Essays in curriculum theory, 1972-1992*. New York: Peter Lang.

Pinar, W.F. (1999). Response: Gracious submission. *Educational Researcher,* **28**(1), 14-15.

Pinar, W.F. (2004). *What is curriculum theory?* Mahwah, NJ: Erlbaum.

Pinar, W.F., Reynolds, W., Slattery, P., & Taubman, P. (1996). *Understanding Curriculum.* New York: Peter Lang.

Polya, G. (1957). *How to Solve It.* Garden City, NY: Doubleday. (Original work published 1945)

Popkewitz, T. (1997). The production of reason and power: Curriculum history and intellectual traditions. *Journal of Curriculum Studies*, **29**(2), 131-164.

Posner, G. & Rudnitsky, A. (1994). *Course design: A guide to curriculum development for teachers* (4th ed.). New York: Longman.

Postlethwait, S.N. (1969). Time for microcourses? *Library College Journal*, **2**(1), 24-29.

Postlethwait, S.N. & Hurst, R. (1971). Minicourses. *Library College Journal*, **4**(1), 16-24.

Raffe, D. (1994). Modular strategies for overcoming academic/vocational divisions: Issues arising from the Scottish experience. *Journal of Educational Policy*, **9**(2), 141-154.

Reed, P. (2001). Learning style and laboratory preference: A study of middle school technology education in Virginia. *Journal of Technology Education*, **13**(1), Retrieved from: http://scholar.lib.vt.edu/ejournals/JTE/v13n1.

Reigeluth, C. (1983). Instructional design: What is it and why is it? In C. Reigeluth (Ed.), *Instructional design theories and models* (pp. 3-36). Hillsdale, NJ: Lawrence Erlbaum.

Reigeluth, C. (1999). What is instructional-design theory and how is it changing? In C. Reigeluth (Ed.), *Instructional-design theories and models, volume 2* (pp. 5-29). Mahwah, NJ: Lawrence Erlbaum.

Reigeluth, C. & Garfinkle, R. (Eds.). (1994). *Systemic change in education*. Englewood Cliffs, NJ: Educational Technology Publication.

Reiser, R. & Dick, W. (1996). *Instructional planning: A guide for teachers*. Boston: Allyn and Bacon.

Romey, W. (1973). The curriculum-proof teacher. *Phi Delta Kappan*, **54**(5), 407-408.

Romiszowski, A.J. (1981). *Designing instructional systems*. New York: Kogan Page.

Romiszowski, A.J. (1984). *Producing instructional systems*. New York: Kogan Page.

Russell, J. (1974). *Modular instruction*. Minneapolis: Burgess.

Sanders, M. (2001). New paradigm or old wine? The status of technology education practices in the United States. *Journal of Technology Education*, **12**(2), Retrieved from: http://scholar.lib.vt.edu/ejournals/JTE/v12n2.

Saylor, J.G., Alexander, W., & Lewis, A. (1981). *Curriculum planning for better teaching and learning.* New York: Holt, Reinhart and Winston.

Schubert, W.H. (1986). *Curriculum: Perspective, paradigm, and possibility*. New York: Macmillan.

Schwab, J. (1962). The concept of the structure of a discipline. *The Educational Record,* **43**(2), 197-205.

Schwab, J. (1964). Structures and dynamics of knowledge. In S. Elam (Ed.), *Education and the structure of knowledge* (pp. 6-42). Chicago: Rand McNally.

Schwab, J. (1969) *College curriculum and student protest.* Chicago: University of Chicago Press.

Short, E. (1991). *Forms of curriculum inquiry*. Albany: State University of New York Press.

Silvern, L.C. (1968). Cybernetics and education K-12. *Audiovisual Instruction,* **13**(4): 267-275.

Slattery, P. (1995). *Curriculum development in the postmodern era*. New York: Garland.

Smith, B.O. (1945). The normative unit of instruction. *Teachers College Record*, **46**(4), 219-229.

Smith, B.O., Stanley, W., & Shores, J.H. (1957). *Fundamentals of curriculum development*. Harcourt, Brace & World.

Stanley, M. (1978). *The technological conscience*. Chicago: University of Chicago Press.

Steininger, E.W. (1959). *Unit teaching practices in the elementary school*. Dissertation Abstracts, 20/09, 3135. (University Microfilms No. AAC6000238).

Stevenson, J.A. (1924). *The project method of teaching*. New York: Macmillan.

Stewart, W. (Ed.). (1983). *Unit teaching: Perspectives and prospects*. Saratoga, CA: R&E Publishers.

Streitz, R. (1939). An evaluation of "units of work." *Childhood Education*, **15**(6), 258-261.

Stockton, J. (1920). *Project work in education*. Boston: Houghton Mifflin.

Strike, K. & Posner, G. (1976). Epistemological perspectives on conceptions of curriculum organization and learning. In L.S. Schulman (Ed.), *Review of research in education 4* (pp. 106-138). Washington, DC: American Educational Research Association.

Taba, H. (1962). *Curriculum development: Theory and practice*. New York: Harcourt, Brace & World.

Tanner, D. & Tanner, L. (1989). *History of the school curriculum*. New York: Macmillan.

Tennyson, R. & Schott, F. (1997). Instructional design theory, research and models. In R. Tennyson, F. Schott, N. Seel , & S. Dijkstra (Eds.), *Instructional design: International perspectives, volume 1* (pp. 1-16). Mahwah, NJ: Lawrence Erlbaum.

Theodossin, E. (1980). *The modular market*. Coombe Lodge, England: FE Staff College.

Tyler, R. (1949). *Basic principles of curriculum and instruction*. Chicago: University of Chicago Press.

Venable, T. (1958). *Patterns in secondary school curriculum*. New York: Harper & Brothers.

Waks, L. (1997). The project method in postindustrial education. *Journal of Curriculum Studies*, **29**(4), 391-406.

Watson, D. (1989). *Managing the modular course*. Philadelphia: Open University Press.

Wraga, W.G. (1997). Patterns of interdisciplinary curriculum organization and professional knowledge of the curriculum field. *Journal of Curriculum and Supervision*, **12**(2), 98-117.

Wraga, W.G. (1998). "Interesting if true:" Historical perspectives on the "reconceptualization" of curriculum studies. *Journal of Curriculum and Supervision*, **14**(1), 5-28.

Wraga, W. (1999a). 'Extracting sun-beams out of cucumbers'. The retreat from practice in reconceptualized curriculum studies. *Educational Researcher,* **28**(1), 4-13.

Wraga, W. (1999b). The continuing arrogation of the curriculum field: A rejoinder to Pinar. *Educational Researcher,* **28**(1), 16.

Zuga, K. (1987). Conceptualizing the technology education curriculum. *Journal of Epsilon Pi Tau*, **13**(1), 50-58.