POSTMODERN THEORY, COMPUTER TECHNOLOGY, AND EDUCATION: LOOKING FORWARD TO A POSTMODERN EDUCATION

DISSERTATON

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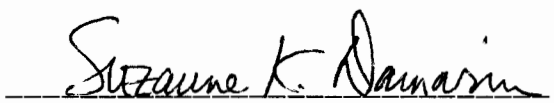

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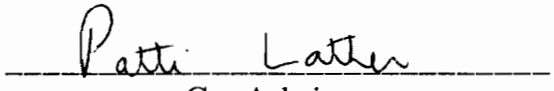

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I dedicate this work to the
three people that made this work possible:
Sharon E. Hay, my wife;
Suzanne K. Damarin, my mentor; and
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POSTMODERN THEORY, COMPUTER TECHNOLOGY, AND EDUCATION: LOOKING FORWARD TO A POSTMODERN EDUCATION

> In some cases theory also provides a refuge to think beyond current forms of practice so as to envision that which is not yet.[1]

Our present educational environment, born four hundred years ago, is based on the Gutenberg book, humanism, empiricism, and the Reformation. In this tradition, the ideal Renaissance man attempted to be educated by the "best that has been known and said in the world."[2] At the end of the 20th century, we find ourselves at the threshold of an era where we have lost the human essence for humanism, the foundations of empiricism, and the God of the Reformation; and we are increasingly mesmerized by the non-linearity of the computer. At the same time we are faced with radical pluralism and fracturing ideals of culture and community. Where the ideal of the Renaissance man is increasingly being

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[1]Henry Giroux & Stanley Aronowitz *Postmodern Education: Politics, Culture, & Social Criticism* (Minneapolis: University of Minnesota Press, 1991), p 92.

[2]R. H. Super. (ed.) *The Complete Prose Works of Matthew Arnold, Vol II* (Ann Arbor: The University of Michigan Press, 1962), p. 323.

rejected, the previously marginalized "Others" are exerting their voices as well as finding that the "best that has been known and said in the world" has less and less relevance in their lives. At one conference it was put well:

> What can be done to assure that our educational system conserves humanity's wisdom yet is responsive to the complexities of a postmodern, multicultural, electronic world that is aware, on the one hand, of the contingency of knowledge and the fragility of tradition and, on the other, of the importance of global community and of the social construction of solidarity?[3]

This dissertation will take on the task of answering this question. It will be done through theoretical exploration of postmodern theory, computer technology, and education; as well as an empirical and narrative exploration of the possibility of an educational environment informed by postmodern theory. What follows is a theory that attempts to reshape our concept of education, a reshaping that incorporates two powerful contemporary forces: post-modern theory and computer technology. This theory is not an attempt to fine tune or overhaul our educational system; rather it is an attempt at conceiving and theorizing about a new way to think about education.

This theory is not a cybernetic or technical educational theory that informs the usage of computer technology in traditional

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[3]Bard Center, "Educating for Complexity in the 21st Century," conference held January, 1991.

education. Nor is it a technological theory through which we can create a superior education by the application of technical rationality. However, this theory has been mutually shaped by the criticism of the foundations of traditional education that are derived from postmodern theories and the advancements and capabilities of today's computer technology. Neither computer technology nor postmodernism determines the theory, but each significantly contributes to its development and conception.

The postmodern critique has questioned the foundations and even the very notion of an absolute Truth which we as scientists continue to attempt to slowly uncover on the basis of ever more sophisticated methods which we construct. This has created three important crises within education. The first is the crisis in representation; the second is the crisis of authority; and the third is the crisis of subjectivity.

The crisis in representation was sparked by those challenging traditional foundationalist theories of Truth (i.e., the divine theories of Western religion and the enlightened theories of science). These theories state that there are words in things and in nature that can be abstracted out of them by scientists or prophets. The words then form a structure or framework for knowledge that is ahistorical, cross cultural, apolitical; in short they are: "just the facts." The challenger of this notion

> assumes that there is no such thing as a universal foundation, ground, framework, or structure of knowledge. There is only an agreement, a consensus

> arrived at for the time being by communities of knowledgeable peers. Concepts, ideas, theories, the world, reality, and facts are all language constructs generated by knowledge communities and used by them to maintain community coherence.[4]

The crisis in representation calls into question what it is that we consider as knowledge and why we should teach it to our students. In this crisis, the abstract foundation in which we ground our knowledge of what we teach and the knowledge of how we teach has been severely undermined.

The second issue is directly derived from the first. If knowledge claims have lost their foundations, where do we obtain the authority to educate others? In the past, our authority has been anchored in our ability as educators to become experts at two things: the universal structure of a particular knowledge base and the universal educational principles of learning. Knowing the Truth about content and the learner gave us the authority to intervene into our students' lives. With the crumbling of the notions of Truth, foundational principles, and universal structure, there is a corresponding erosion of our authority to intervene as educators on our students' behalf. Taken to extreme, this crisis could erode educators' ability to create a segment of the population called "students." This is the crisis of authority. This crisis raises these questions: On what basis do we as educators intervene into

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[4]K. A. Bruffee,"Social Construction, Language and the Authority of Knowledge: A Bibliographical Essay," *College English,* vol. 48, (1986), p. 177.

students' lives if knowledge is just a social construction? How can we justify our authoritative position if we have lost our ability to tie our authority to "something outside of ourselves"?

The third issue, the crisis of subjectivity, is again directly derived from the first. This crisis calls into question the Truth about the self. The past Truths of the self include: the autonomous rational self of Kant, the dominated controlled self of Marx, and the depraved self of Christianity. These were all simply myths that we used on each other and on our students. Postmodernism positions the self, the way we conceive or construct selves, as always a part of our history and the words that others and we in turn use to construct our self-understandings. There is no essentialized self. Once again this puts educators in a crisis, for modern educational methods are based on conceiving the learner in some very precise ways. Without being able to say, "We as educators know more about the learner than the learner does," educators have a difficult time justifying themselves.

In response to these three crises raised in the postmodern critique this dissertation argures for three counter-practices: a representation of multiplicity (for the crisis of representation); the creation of the powerful student and using education as a resource (for the crisis of authority); and making a private/public self division and providing space for self-creation (for the crisis of subjectivity). One might respond to the crisis of representation by saying that because no knowledge is privileged, then none should

be exalted. Every student should invent and create their own knowledge. This I feel would lead to isolation, a breakup of the community, and a lack of "social progress." The approach that I prefer suggests that because no one knowledge can be foundational, then as many as possible should be represented and accessible to the student. It is not that the students must or should learn all the different knowledges, but they should have access to them.

My response to the second issue, the crisis of authority, is that students should be put into a position of a powerful student instead of a weak learner. This would release the students from the educational authorities that currently restrict them. Because current educational practices can no longer claim be grounded in "Truth," the authority educators have to intervene into the students' lives should be eliminated or restricted. Powerful students are in a position where they can create their own knowledge because they are in the best position to understand their social context and their knowledge community. However, the traditional educational experts are not eliminated from the educational environment; in fact they are still a major contributing force. It is just their authority to intervene into students' lives that is eliminated. Students still have an option to knowingly and willingly accept the authority of other experts and other bodies of knowledge for their own ends. In this environment the educators and their goods are conceived of as educational resources instead

of educational directives. This position I have labeled "least-impositional education."

Perhaps the most difficult crisis brought on by the post-modern critique is the crisis in subjectivity. Every attempt to reconceive of the self seems to lead down the same old path. A notion of acceptance of multiple and sometimes conflicting selves makes steps in the right direction but does not go far enough. After struggling with this crisis, I find Rorty's concept of the private/public selves seems to be a good working option. Through this division we can historicize, criticize, and create a self that can be under constant deconstruction and reformation. At the same time "we" can have a self that can be used to maintain some form of community, a community which we are constantly trying to improve.

Given these three postmodernist critiques and my related responses to those critiques, the question quickly becomes: How do we create such an educational environment? This question introduces the second powerful contemporary force: computer technology. The capabilities that computer machinery utilize in supporting the creation of a postmodern education are functions of a collector and a connector. The computer has the power to collect or store huge amounts of information in many different forms. This computer function can be used for multiple representations of codified knowledge at many different levels. The computer can collect codified knowledge at the levels of messages (e.g. scientific,

Christian, Marxism, phonetics, Euclidean, etc.), methods (e.g. instructional, persuasive, entertaining, behavioral, etc.), and media (e.g. print, text, video, audio, animations, etc.).

The second computer function is as a connector. The computer is a device that can create connections across and between discourse messages, methods, and media; between the student and discourse messages, methods, and media; between students and referenced discourse messages, methods, and media that cannot actually be put onto the computer; and directly or indirectly between students and experts, teachers, authors and other students. The computer can make these connections immediately in the context of the student's interest. Most of these connections would be authored just as text would with a message, method, and media; however, there will be some connections that can be made "on the fly" by discourse representatives (people on the computer system), logical computer functions at the disposal of the student, and possible artificially intelligent connections made by recognition programs.

These two computer functions of collector and connector give the student a medium that reconciles the post-modern critic's argument "that linearity in text, organization, rationale, and argument is deceptive"[5] by producing a non-linear text (or medium) that can represent knowledge as historical, temporal,

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[5]Cleo H. Cherryholmes, *Power and Criticism: Poststructural Investigations in Education* (New York, NY: Teachers College Press, 1988), p. 146.

fallible, limited, compromised, negotiated, incomplete, value-laden, power constituting and contradictory. Students negotiate a medium that can also, in some ways, be "self-deconstructing" and "self-critical" in ways never before possible. More precisely, students are presented with a medium that represents constructed knowledges and the deconstruction of those knowledges; likewise, they are presented with a medium that represents the knowledge claims of the creator as well as their critics.

In conclusion, a post-modern education is an education where students are put into a powerful position where they can create knowledge or choose to impose others' knowledge upon themselves. When they choose to impose others' knowledges, the knowledges are presented in a medium that represents multi-sited bodies of knowledge. This one medium presents these multi-sited bodies of knowledge in such a way that no one body of knowledge has a privileged position and all are interconnected and can be immediately accessible. A postmodern education should also extend the student's culture beyond the classroom to members of these knowledge communities, other teachers, and other students.

I will begin this work with a review of a subsection of postmodern thought represented by Richard Rorty, Michel Foucault, Jacques Derrida, and Jean-Francois Lyotard; then draw some educational implications of these lines of postmodern thought. Based on these implications, I will attempt to "look forward" to an education that is informed by these theories

through the use of a science fiction scenario. Once this "vision" is created there will be an articulation of some possible educational constructs and practices that may promote this vision. Then, through an exploration of the facilities of computer technology, it will be submitted that computer technology can serve as one of the facilitators and catalyst to this type of postmodern education. Finally, to go beyond the theoretical realm, a prior ethnography will be conducted on an instantiatation of this postmodern educational vision involving middle school students on the topic of triangles. The findings of this prior ethnography are reported through the telling of one realistic tale and three evocative or impressionistic tales.

Now let's begin by exploring and a struggling with what is meant by postmodernism.

CHAPTER II

POSTMODERN THEORY REVIEW

As mentioned in the introduction, the theorectical frame for this dissertation is based on the theories labeled "Postmodern." The following is a brief review of postmodern theory, and an exploration of the postmodern theorists that I have used and been influenced by in the creation of this dissertation. Those theorists are Rorty, Foucault, Derrida, and Lyotard.[6]

"As early as 1954, Toynbee argued that the modern age ... is beginning to be superseded by a new postmodern age characterized by the coexistence of different cultures."[7] Postmodernism is a broad term generally (but not always) incorporating many theoretical and methodological positions, including post-structuralism, deconstructionism, post-analytical philosophy, neopragmatism, post-feminism, post-Marxism, post-logocentrism and post-phallogocentrism. It has been developed and supported by efforts in many diverse fields including social

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[6] I will review the reasons for the selection of these four theorists in a concluding section of the chapter.

[7] Arnold J. Toynbee, *A Study of History Vol. 8* (London: Oxford University Press, 1954), p. 338.

theory, philosophy, physics (e.g. chaos theory), mathematics (e.g. non-linearity, fractals), literary criticism, critical theory, architecture, law (the critical legal studies movement), feminism and the social sciences. The postmodern condition is most notably the "incredulity of the meta-narrative,"[8] specifically, the "meta-narratives" or grand organizing philosophies which have come from "somewhere outside of ourselves" and have been put forth as the principles we live our lives by. These "meta-narratives" include Western theology's promise of an after-life, the

> Enlightenment story of the gradual but steady progress of reason and freedom, Hegel's dialectic of the Spirit coming to know itself, and, most importantly, Marx's drama of the forward march of human productive capacities via class conflict culminating in proletarian revolution.[9]

By debunking these meta-narratives, postmodernism denies the possibility of an ahistorical, universal, unifying, transcendental, a priori, objective, independent truth that is "mirrored" by an autonomous rational mind which is disembodied, dispassionate and disengaged. Instead the postmodernist views truths as socially constructed, historicized, cultural, partial, particular, subjective, power-laden, plural, fractured, incommensurable, multiple,

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[8]Jean-Francois Lyotard, *The Postmodern Condition: A Report on Knowledge* (Minneapolis: University of Minnesota Press, 1979).

[9]Nancy Fraser and Linda Nicholson, "Social Criticism without Philosophy: An Encounter Between Feminism and Postmodernism," in Andrew Ross (ed.)*Universal abandon: The Politics of Postmodernism* (Minneapolis: University of Minnesota Press, 1988).

temporal, conflicting, complex, contextual, and indeterminant. These truths are represented by and across a situated person, in a particular culture, at a point in time, and at the intersection of any number of language games. Postmodernism has led to the "blurring of the genres"[10] by deconstructing, among others, the strongly held binary distinctions: fact/value, subject/object, rational/irrational, culture/nature, science/arts, logic/rhetoric, literal language/metaphor, argument/narrative, etc. Postmodernism does this, while also "tend[ing] to be skeptical about autonomous 'spheres' of knowledge and culture or separate 'fields' of 'experts.'"[11]

The previous account is an attempt, not to define the emerging and shifting "thing we call the 'postmodern';" but to give a quick overview of the history, the proponents, and the major claims of postmodernism. I will now extract, for the purposes of this dissertation, several constructs and arguments from the theories of four major forces in the discourse of postmodernism: Rorty, Foucault, Derrida, and Lyotard.

2A. Richard Rorty

Richard Rorty is most recognized as the converted analytical philosopher whose criticism of the Enlightenment notion that the mind is the "Mirror of Nature" has helped fuel the fires of post-

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[10]Clifford Geertz, "Blurred Genres," *American Scholar,* Vol. 49, (1980).

[11]Carol Nicholson, "Postmodernism, Feminism, and Education: The Need for Solidarity", *Educational Theory,* Vol. 39, No.3, (Summer, 1989), p. 198.

modernism. His writings, have been for me, the most accessible of the postmodern theorists, and they have wide-ranging implications for most scholarly endeavors. In the introduction to his recent book, *Contingency, Irony, and Solidarity,* Rorty positions himself on the side of "historicist thinkers" whose "strategy has been to insist that socialization, and thus historical circumstances, goes all the way down - that there is nothing 'beneath' socialization or prior to history which is definatory of the human."[12] This "historicist turn" is a result of the abandoning of universal truths of Western theology and metaphysics which has "helped us substitute Freedom for Truth as the goal of thinking and of social progress."[13] To clarify the difference between universal Truth and subjective truths, while connecting us to something, Rorty argues that there is a difference between the world being out there and Truth being out there. The world is the thing that bumps us around, but for Rorty, "[t]he world does not speak [universal Truths]. Only we do [speak subjective truths]."[14]

In losing the guidance of the grand narrative as the "things we live our lives by," the historicist is led to the conclusion that all is contingent. Rorty points out that the

> line of thought common to [Hans] Blumenberg, Nietzsche, Freud, and [Donald] Davidson suggests that we try to get to the point where we no longer worship

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[12]Richard Rorty, *Contingency, Irony, and Solidarity* (New York, NY: Cambridge University Press, 1989), p. xiii.

[13]Ibid, p. xiii

[14]Ibid, p. 6

> *anything*, that we try to get to the point where we treat *everything* - our language, our conscience, our community - as a product of time and chance. To reach this point would be, in Freud's words, to 'treat chance as worthy of determining our fate.'[15]

Contingency of Language

Supporting this notion, Rorty writes of the contingency of three of life's major constructs: language, selfhood, and community. Using the works of Wittgenstein and Davidson, Rorty argues that language is contingent. He states that "the world does not tell us what language games to play."[16] Rather it is an evolutionary process where a society "gradually lost the habit of using certain words and gradually acquired the habit of using others."[17] Instead of thinking of language as "mirroring" reality we should consider that language's "'truths' are just useful lies."[18] It means forgetting the myth that the development of our language is an increasingly progressive approximation of the representation of the Truth, and, instead, speaking of the evolution of a "history of increasingly useful metaphors."[19] Countering the Enlightenment's glorification of the scientist, Rorty glorifies the poet by pointing out that a "sense of human history as the history of successive metaphors would let us see the poet, in the generic

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[15]Ibid, p. 22 : original emphasis
[16]Ibid, p. 6
[17]Ibid, p. 6
[18]Ibid, p. 8: quoting Nietzsche
[19]Ibid, p. 9

sense of the maker of new works, the shaper of new languages, as the vanguard of the species."[20] He continues,

> If, with Davidson, we drop the notion of language as fitting the world, we can see the point of Bloom's and Nietzsche's claim that the strong maker, the person who uses words as they have never before been used, is best able to appreciate her own contingency."[21]

For if we join the scientists or any other group of Truth-seekers, "[w]e are doomed to spend our conscious lives trying to escape from contingency rather than, like the strong poet, acknowledging and appropriating contingency."[22] Finally giving up on the possibility of language to describe "the way the world is," "fitting the facts," or as a "medium which is gradually taking on the true shape of the true world or the true self,"[23] Rorty supports Nietzsche in his redescribing language as "a mobile army of metaphors."[24]

Contingency of Selfhood

The contingency of selfhood is the acknowledgement that there is no essentialized self that we can get in touch with. It is the acknowledgement "that socialization, and thus historical circumstance, goes all the way down - that there is nothing

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[20]Ibid, p 24
[21]Ibid, p. 28
[22]Ibid, p. 28: emphasis added
[23]Ibid, p. 50
[24]Ibid, p. 17

'beneath' socialization or prior to history which is definatory of the human."[25] This contingency of selfhood recognizes that, "[i]f there is no center to the self, then there are only different ways of weaving new candidates for belief and desire into antecedently existing webs of belief and desire."[26] Understanding ourselves comes from changing the question we ask ourselves from questions like: "How do you know?"[27] to ones like, "Why do you talk that way?"[28] Rorty sees Freud as the major contributor to a selfhood based on contingency; he is "the moralist who helped de-divinize the self by tracking conscience home to its origin in the contingencies of our upbringing."[29] Contingency was accommodated by the mind through poetry that "is indigenous to the very constitution of the mind."[30] In fact Freud "saw the mind as being, in the greater part of its tendency, exactly a poetry-making faculty."[31] By doing this Freud made it possible for all to have a unique and interesting self or "[a]s Philip Rieff puts it, 'Freud democratized genius by giving everyone a creative unconscious.'"[32] Thinking of the mind as a "poetry-making faculty" counters most of metaphysician's work to find a "blind impress."

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[25]Ibid, p. xiii
[26]Ibid, p. 84
[27]Ibid, p. 51
[28]Ibid, p. 51
[29]Ibid, p. 30
[30]Lionel Trilling, *Beyond Culture* (New York: Harcourt Brace, 1965), p. 79. Quoted by Rorty, p. 36.
[31]Ibid, p. 36: this point is made by Trilling.
[32]Philip Rieff, *Freud: The Mind of the Moralist* (New York: Harper & Row, 1961). Quoted by Rorty, p. 36.

> Think of finding such an impress as being the discovery of the universal conditions of human existence, the great continuities - the permanent, ahistorical, context of human life. This is what the priests once claimed to have done. Later the Greek philosophers, still later the empirical scientist, and later still the German idealist, make the same claim. They were going to explain to us the ultimate locus of power, the nature of reality, the conditions of the possibility of experience. They would thereby inform us what we really are, what we are compelled to be by powers not ourselves. They would exhibit the stamp which had been impressed on *all* of us. This impress would not be blind because it would not be a matter of chance, a mere contingency. It would be necessary, essential, telic, constitutive of what it is to be a human. It would give us a goal, the only possible goal, namely, the full recognition of the very necessity, the self-consciousness of our essence.[33]

Thus Rorty submits that the advantage the poet has over the metaphysician is that poets are "acknowledging and appropriating contingency," whereas metaphysicians are fighting their contingency through the quest of the Holy Grail of the blind impress of the universe.

Contingency of Community

The contingency of community is once again the recognition of chance as a worthy shaper of our community, while giving up the grand narratives as the source of how one's community is created. Rorty sees community as being based with a group of historically situated players in a language game that should be "...conceived as

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[33]Ibid, p. 26: original emphasis

a band of eccentrics collaborating for purposes of mutual protection rather than as a band of fellow spirits united by a common goal."[34] The community has lost its ability to judge the actions of its members by what is True, but rather on the historically constructed rules that make it a community.

> An immoral action is, on this account, the sort of thing which, if done at all, is done only by animals, or by people of other families, tribes, cultures, or historical epochs. If done by one of us, or if done repeatedly by one of us, that person ceases to be one of us."[35]

A postmodern community then to Rorty would 1) not seek justification in essentialized foundations, 2) acknowledge its historicity and ties to the current language games, 3) acknowledge that judgements of members' actions are based on community criteria rather than the Truth, and 4) come to recognize that the only bonding force of the community is its members' common vocabulary.

Rorty as Liberal

The vehicle Rorty believes could make his new society possible is a revised notion of liberalism, a liberalism that "says that liberals are the people who think that cruelty is the worst thing we do."[36] Rorty's version of liberalism needs

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[34]Ibid, p. 59
[35]Ibid, p. 59
[36]Ibid, p. xv

> a redescription of liberalism as the hope that culture as a whole can be 'poeticized' rather than as the Enlightenment hope that it can be 'rationalized' or 'scientized.' That is, we need to substitute the hope that chances for fulfillment of idiosyncratic fantasies will be equalized for the hope that everyone will replace 'passion' or fantasy with 'reason.'[37]

Rorty wants to separate his "redescribed" political liberalism from a rationalized foundational liberalism that bases itself on a metaphysics. Giving up the ability to justify his liberalism against Truth, he wishes to "regard the justification of liberal society simply as a matter of historical comparison with other attempts at social organizations - those of the past and those envisaged by utopians."[38] Rorty's vision holds that

> [a] liberal society is one whose ideals can be fulfilled by persuasion rather than force, by reform rather than revolution, by the free and open encounters of present linguistic and other practices with suggestions for new practices. But this is to say that an ideal liberal society is one which has no purpose except freedom, no goal except a willingness to see how such encounters go and to abide by the outcome.[39]

By creating such a society Rorty hopes that its citizens will be commonsensically Freudian enough to see the founders and preservers of their society as poets "who happened to find words

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[37]Ibid, p. 53

[38]Ibid, p. 53

[39]Ibid, p. 60 : Rorty's idea of "free and open encounters" is close to and as problematic as Habermas' "ideal speech community" which has been dismissed by most of the postmodern critics(e.g. Fraser).

to fit their fantasies, metaphors which happened to answer the vaguely felt needs of the rest of the society."[40] Furthermore, they

> will be commonsensically Bloomian enough to take for granted that it is the revolutionary artist and the revolutionary scientist, not the academic artist or the normal scientist, who most clearly exemplifies the virtues which she hopes her society will itself embody.[41]

Finally, Rorty's liberal will be dedicated to keep the "conversation" going because it is the best vehicle to maintain such a liberal society.

Public and Private Split

Rorty divides the self into two separate entities: the public self and the private self. The "mature (de-scientized, de-philosophized) Enlightenment liberalism"[42] is the forum of the public self. The public self in our "poeticized" culture will commonsensically think that "cruelty is the worst thing we can do."[43] In this public forum we as members of a community create vocabularies to "protect the weak from the strong" in an open debate of metaphors that we then impose on our community as the standards "we" live our lives by. The standards will be seen as the current best way that we have come up with, to live our communal

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[40]Ibid, p. 61
[41]Ibid
[42]Ibid, p. 57
[43]Ibid, p. xv

lives by, instead of the best approximation of some essentialized foundation that we should live by. The private self is where we all have the opportunity for self-creation, to "acknowledge and appropriate" our contingency, and to be a "strong poet" of our lives. This private self has no authority outside of ourselves, other than the possibility to provide a useful metaphor that could meet some public need. Rorty does not attempt to attach this public/private split to "human nature"; rather it signals a giving-up of the futile "attempt to unite one's private ways of dealing with one's finitude and one's sense of obligation to other human beings."[44] Splitting the self into public/private selves allows for the protection of the idiosyncratic fantasies while at the same time limiting the imposition of these fantasies to their creators or to the confines of the public debate forum.

This public/private split Rorty makes here is important to this project, and will be utilized in a later chapter. However, this split has come under fire, most notably from Nancy Fraser.[45] Fraser states that, "the partition position fails because final vocabularies do not neatly divide into public and private sectors; nor do actions neatly divide into public and private."[46] She is especially concerned with the future of radical theory in such a partition. She argues that, "[r]adical theory, in other words, gets inflected as

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[44]Ibid, p. 68

[45]Nancy Fraser, "Solidarity or Singularity? Richard Rorty between Romanticism and Technocracy," in Alan Malachowski (ed.) *Reading Rorty* (Cambridge, Mass.: Basil Blackwell Ltd., 1990), pp. 303-321.

[46]Ibid, p. 313

a sphere apart from collective life, a sphere of privacy and of individual self-fashioning."[47] With this privatization, radical theory becomes "quarantined" and "rendered sterile" under the domain of "top-down social management." This sterile top-down management leaves bourgeois liberalism in control of all social and political institutions with no room for a radical democracy. Fraser states, "there is no place in Rorty's framework for genuinely radical political discourses rooted in oppositional solidarities."[48]

Fraser makes some interesting points and I think the exact partition between private and public is most problematic; it must be constantly negotiated and renegotiated. However I do think a working partition can be created. The question of radical theory in the public sphere, as I read Rorty, is not an elimination of theory from the public sphere but rather an attempt to eliminate the power of any one theory over every aspect of people's lives. So if "we" can create a radical theory that works for "us" in the public sphere, then all the better, so long as it does not ground itself in the Truth.

Ironist

For Rorty the organizing theory for the public self is liberalism, whereas the organizing theory for the private self is irony. Rorty defines the ironist as

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[47]Ibid, p. 314
[48]Ibid, p. 316

> someone who fulfills three conditions 1) she[49] has radical and continuing doubts about the final vocabulary she currently uses, because she has been impressed by the other vocabularies, vocabularies taken as final by people or books she has encountered; 2) she realizes that argument phrased in her present vocabulary can neither underwrite nor dissolve these doubts; 3) insofar as she philosophizes about her situation, she does not think that her vocabulary is closer to reality than others, that it is in touch with a power not herself. [50]

The ironist differs from the metaphysician in that she prefers dialectic over logic; of looking at writings of all people as "poetic gifts" and "grist for the mill" over dividing them into scientific disciplines and artistic disciplines; of seeing truth as made over seeing truth as found; of seeing "achievements by their relation to their predecessors rather than by their relation to the truth"[51]; of judging predecessors' language by their usefulness not by whether their propositions where false[52]; of looking horizontally back instead of looking vertically from above; of looking at plurality as a virtue instead of looking at a unity as a virtue; of "placing books in the context of other books"[53] rather than explaining their real meaning or evaluating their "literary merit"; or finally, of seeing literary critics as moral advisors instead of the priest or the scientist. "The goal of ironist theory is to understand the

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[49]Rorty mixes the masculine and feminine pronouns within his work often. It seem somewhat random but it's hard to tell; however, an ironist seems to be female.

[50]Rorty, p. 73

[51]Ibid, p. 78-79

[52]Ibid, p. 78

[53]Ibid, p. 80

metaphysical urge, the urge to theorize, so well that one becomes entirely free of it."[54]

Self Creation

The final ingredient of Rorty's works that I will use is the notion of self-creation. He states within the private self there is created a space so that each of us can, but not will or even should, create ourselves. Rorty states that Proust, Nietzsche, Heidegger, and Derrida are useful because they inform our attempts at private perfection, our private attempts at self-creation. Creating a private self means that one "is trying to get out from under [or redescribe] an old final [inherited] vocabulary and fashion one which will be all his own."[55] With the pithy quotations "Thus I willed it"[56]; "to create the taste by which he will be judged"[57]; "Make philosophy one's servant rather than one's master"[58]; and "I must Create a System, or be enslav'd by another Man's;"[59] Rorty creates an image of the private self as a strong poet of the self, albeit only the private self.

Rorty Summary

The postmodernism of Rorty uses the foreground of the contingency of language, selfhood, and community to make a

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[54]Ibid, pp. 96-97
[55]Ibid, p. 97
[56]Ibid, p. 97
[57]Ibid, p. 97
[58]Ibid, p. 97
[59]Ibid, p. 109

pragmatic split between the public self and the private self. In this way, Rorty argues, we can give up the attempts to create unifying theories that have plagued society throughout history. The public self is driven by the conversation with one's community members and organized by a non-metaphysical liberal theory, a theory that "says that liberals are the people who think that cruelty is the worst thing we do."[60] The private self is driven by private attempts at self-creation and the creation of a private final vocabulary. This private self is organized by ironist theory where one must face the irony of one's final vocabulary. This split does not allow one to attempt to unite private final vocabulary with public liberalism; by do so, protecting all of our private creations from the power of our public ones. Rorty's usefulness is in his assessment of the postmodern condition and approaches for action. Michel Foucault, on the other hand, is most noted for his unique historical analysis and is sometimes criticized for a lack of an answer to the question, "What do we do now?" We now turn to a look at the work of Foucault.

2B. Michel Foucault

Michel Foucault is one of the most influential thinkers of the postmodern community. His work has affected many different disciplines, including literary criticism, philosophy, social sciences, political science, and the history of criminology. The challenges

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[60]Ibid, p. xv

and risks that Foucault offers these disciplines are profound and extensive. The following, as much as possible, will summarize Foucault's major themes and methodologies, paying particular attention to the conceptual work that I will utilize in the development of a postmodern educational environment.

Foucault's Methodological Strategies

To get a good feel for Foucault one must understand his basic strategies; therefore I will begin this section with a brief summary of Foucault's methodological strategies. Foucault outlines his methodological strategies in his inaugural lecture at the College de France as professor of the History of Systems of Thought entitled, "The Discourse on Language." Foucault's fundamental strategy, being the one on which the others are developed, is the *reversal.* The method of reversal is "(w)hen tradition gives us a particular interpretation of an event or an historical development, Foucault's strategy is to work out the implications of the reverse or opposite interpretation."[61] To do this Foucault must take two important postmodern stands: first, to consider discourses as authorless and second, to use the name of a thing as the object of study instead of the natural object itself. Foucault brackets the author because

> [w]hen we attribute writing to an author we assume a continuity with the author's other writing. We assume that the author is speaking to us with some clear goal in mind. But Foucault's strategy is to reverse these

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[61]David R. Shumway, *Michel Foucault* (Mass:Twayne Publishers, 1989), p. 15.

> assumptions of continuity and noncontradiction. In this case we look at the way attributing discourse to an author removes it from other connections it might have, and makes us overlook contradictions that might be there. Thus by the strategy of reversal, we consider discourse as authorless.[62]

Foucault also does not want to study natural objects, but rather the historical systems of thought about a given natural object.

> In other words, to understand the history of madness, we do not look for some original object, madness in itself, to which all ideas of madness have ultimately aimed, but rather we must look at madness as a term or concept reinvented at different periods for different ends. This sort of reversal treats the name, rather than the thing or natural object, as the object of inquiry.[63]

Discontinuity is the reversal or the negative counterpart to continuity which is looking at ideas or thoughts as a smooth process or evolution. With the reversal of continuity, Foucault looks within ideas or thoughts for "ruptures, breaks, gaps, displacements, mutations, shifts, interruptions, thresholds, etc."[64] Foucault has conducted famous studies of discontinuities in the historical development of the medical institution, in The *Birth of the Clinic*; of authors' works, in "What Is an Author?"; and the prison system, in *Discipline and Punish*.

The reversal of specificity is the destruction of the myth that our, or any, discourse is an accurate representation of a reality. In

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[62]Ibid, p. 16
[63]Ibid, p. 16-17
[64]Ibid, p. 19

reversing the specificity assumption, "Foucault begins rather with the assumption that discourse is a violence that we do to things, a practice we impose on them."[65] These assumptions negate the notion that the progression of science or language is the triumph over subtle flaws in our representations, instead Foucault argues that other *epistemes* (systems of thought) are legitimate within their assumptions.

Exteriority, the final strategy, is the motivation for finding the deep meaning behind the surface confusion. In the reversal of exteriority, Foucault takes the surface of discourse itself as the object of study. "Foucault's strategy of exteriority is to look for the 'conditions of existence' of discourse, 'for that which gives rise to the chance series of these events and fixes its limits.'"[66] These "conditions of existence" come in two types: inside the discourse, archeology, and outside the discourse, genealogy.

The Gaze

In the beginning of his study of the development of the modern medical institution, *The Birth of the Clinic*, Foucault states that the book is "about space, about language, and about death; it is about the act of seeing, the gaze."[67] However, Foucault reverses our assumptions about the act of seeing:

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[65]Ibid, p. 21

[66]Michel Foucault, "Discourse on Language," appendix to *The Archaeology of Knowledge* (New York: Patheon, 1972), p. 229. Quoted by Shumway, p. 23.

[67]Shumway, p. 66

> "To see something" means metaphorically to perceive it as it is without bias or distortions of mere thought. But it is Foucault's point that we never "see" things in this way. The gaze is a matter of applying a language or a mathematics to the thing seen so that it is constituted by the observer in his terms. Thus the gaze suggests that knowledge forms at the intersection of seeing and speaking.[68]

In The *Birth of the Clinic* ,

> Foucault describes *death* as the vantage point of the medical gaze, the point from which life and disease can be seen. Prior to this, both life and death had made disease invisible, it being literally concealed by the living body and obscured by the effects of death.[69]

The powerful concept of the gaze "shows how even the apparently simple act of seeing is always conditioned by the discourse and practices in which it takes place."[70]

Episteme

Foucault calls a period between discontinuities of history an *episteme,* which he defines as a period which has distinctive "intellectual conditions of possibility."[71] Again Foucault does not see these *epistemes* as chapters in a diary of reality that are progressively improving approximations of a metaphysical reality, but rather discontinuous events separated by "ruptures" in systems of thought. Rather than analyzing these periods on the

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[68]Ibid, p. 58-59
[69]Ibid, p. 36: emphasis added.
[70]Ibid
[71]Ibid, p. 67

basis of empirical or transcendental truth, Foucault "is attempting to understand the knowledge of the past in terms of its own epistemic context."[72] The goal of this analysis "is not history of ideas or science, but a project designed to show how science and theory became possible, to explain the conditions of possibility of knowledge rather than the specific content of the knowledge itself."[73] For Foucault, one must first understand the *episteme* because it constitutes the content. Foucault in the *The Order of Things*, identifies three *epistemes* in the archealogy of human science: the Renaissance, the classical age, and the modern age.

Renaissance

The first *episteme* Foucault labels is the Renaissance, which can be most notably characterized by the notion of resemblance. Resemblance is the view that words "exist first of all" and directly and naturally come from the objects which they represent. For example, "strength is written in the body of the lion" and "regality in the eye of the eagle."[74] The hermeneutics of resemblance was this search and discovery of resemblance; which was "the learning and skills that enable one to make the signs speak and to discover their meaning."[75] Once the nature marking or *signature* was discovered from an object, then it too was seen to "reside in the

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[72]Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Random House, 1970), p. 29.
[73]Shumway, p. 68
[74]Foucault, *The Order of Things*, , p. 29
[75]Ibid, p. 42

world, among the plants, the herbs, the stones, and the animals."[76] Therefore, this signature became an object of study; the study of which was called the semiology of resemblance. This semiology, perhaps for the first times leads to "the absolutely open dimension of a language no longer able to halt itself"[77] because it "found itself caught, no doubt, between these interacting elements, in the interstice occurring between the primal Text and the infinity of Interpretation."[78] The disappearance of this "complex" ternary arrangement would coincide with the end of the Renaissance. The ternary system would be replaced with a binary system that would stabilize the infinite commentary, would eliminate the materiality of language as being in things, and would see language as an arbitrary system of representations.

The Classical Age

The second period Foucault identified and analyzed was the *episteme* called the classical age. Where the Renaissance was characterized by resemblance, the classical age is characterized by representation. "Resemblance is now (in the classical age) a mere condition of nature, but knowledge is no longer in nature; it is the representation of nature."[79] In this reconfiguration, "resemblance was pushed out to the boundaries of knowledge"[80] and

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[76]Shumway, p. 70
[77]Foucault, *The Order of Things*, p. 56
[78]Ibid, p. 71
[79]Ibid, p. 71
[80]Ibid, p. 74

> [t]he activity of the mind. . . no longer consisted in *drawing things together,* in setting on a quest for everything that might reveal some sort of kinship, attraction, or secretly shared nature within them, but on the contrary, in *discrimination,* that is, in establishing their identities.[81]

This change establishes the primary aim of the seventeenth century project as the creation of "the great tables of knowledge developed according to the forms of identity, of difference and of order."[82] This change in thought can best be illustrated in analysis of wealth, one of Foucault's examples: "In the Renaissance, precious metals served as signs and measures of wealth because they were wealth."[83] However, in the classical age "[g]old is precious because it is money - not the converse."[84]

The Modern Age

The modern age is the third *episteme* that Foucault identifies and analyzes. This *episteme* is signaled by the creation of a new object of study, man. Foucault argues that even though thinkers during the "Renaissance 'humanism' and Classical 'rationalism' were indeed able to allot human beings a privileged position in the order of the world, . . . they were not able to conceive of man."[85] This profound mutation places man in an "ambiguous position as

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[81]Ibid
[82]Ibid, p. 83
[83]Ibid, p. 312
[84]Ibid, p. 268
[85]Ibid, p. 268

an object of knowledge and as a subject that knows."[86] The rupture that was to make possible the displacement of natural history by biology was the establishment, by Cuvier, of a classification system that captures "life in its non-perceptible, purely functional aspect"[87] instead of the classical taxonomy created "entirely on the basis of the four variables of description (forms, number, arrangement, magnitude)."[88] Classification of living beings now comes from the functional elements "most hidden form view", as classification that could not be conceived of in the classical age.

Discourse

Discourse is another one of Foucault's major conceptual building blocks. "Discourses are composed of signs, but what they do is more than use these signs to designate things."[89] They constitute meaning and social authority, through the discursive practices that create them. A discourse implicates and constrains what is said, limits who can say it, and what position they can say it from. However, "[d]iscourses are not *about* objects; they do not identify objects, they constitute them and in the practice of doing so conceal their own invention."[90] Thus a discourse becomes the lens through which a discursive community views the world.

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[86]Foucault, "Discourse on Language," p. 229. Quoted by Shumway, p. 23.
[87]Foucault, *The Archaeology of Knowledge,* p. 138
[88]Ibid, p. 139
[89]Ibid, p. 49
[90]Ibid, p. 49, emphasis added

People do not speak the Truth or the Natural; rather they speak within the framework and with the vocabulary that their particular discourse has constrained them to speak. However, people do not speak discourses, but rather discourses speak people and shape what they speak.

Archaeology

Foucault's methodology of archaeology, although a major part of previous works, was fully articulated in the *Archaeology of Knowledge*. The method looks at a discourse's internal conditions of existence, studying the "range of possible statements that the discourse can produce."[91] Archaeology studies discourses not as a collection of transparent signifiers or documents, but rather as a "monument" whose "unfortunate opacity must often be pierced."[92] Through the differential analysis of discourses' specificity and modalities instead of the analysis of the "gentle slope" of discourses' subtle progression, archaeology wishes to "show in what way the set of rules that they put into operation is irreducible to any other."[93] Foucault analyzes discourses not in terms of a naturally unified mosaic of reality but rather in terms of *discursive formations*, understood as "large groups of statements". These groups of statements are "rather full of gaps, intertwined with one another, interplays of differences, distances,

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[91]Michel Foucault, *Death and the Labyrinth* (Garden City, NY: Doubleday, 1986), p. 177.

[92]Shumway, p. 100

[93]Foucault, *The Archaeology of Knowledge,* p. 37

substitutions, transformations,"[94] and are unified by a *system of dispersion*. Discursive formations are subjected to a body of inexplicit *rules of formation* that govern the production, existence, coexistence, maintenance, modification, and disappearance of objects, statements or concepts within a discursive formation.

The formation rules of enunciative modalities, "which might be defined as the conditions under which an *enounce* ('a serious speech act'[95]) might be uttered,"[96] was another area of analysis for Foucault. Studying the questions of "Who is speaking?", "Who is qualified to do so?", "What institutional site are they speaking from?", and "What is their relationship to various groups of objects?" Foucault argues that

> What holds these modalities together within a field is not the activity of a prediscursive consciousness, but 'the specificity of a discursive practice. . . Thus conceived, discourse is not the majestically unfolding manifestation of a thinking, knowing, speaking subject, but, on the contrary, a totality in which the dispersion of the subject and his discontinuity with himself may be determined'. Discourse is no longer to be understood as the expression of the speaker, but rather the speaker is to be understood as part of a system of discursive practice.[97]

This leads to Foucault's version of the decentering of the subject:

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[94]Shumway,p. 102-103

[95]Foucault,*The Archaeology of Knowledge,* p. 229.

[96]Michel Foucault,"Nietzsche, Genealogy, History" in *Language, Counter-Memory, Practice: Selected Essays and Interview* (Ithaca, NY: Cornell University Press, 1977), p. 153.

[97]Foucault,"Nietzsche, Genealogy, History", p. 146

> Foucault looks at this process not from the point of view of the self, but from that of discourse. That the subject is dispersed within a discursive formation says nothing about what it might feel like to experience that formation; rather, it tells us something about the authority or the foundation that discourse carries.[98]

Genealogy

Genealogy "is the project that looks at a discourse's external conditions of existence, studying the questions of 'how the right to speak is governed within a discourse or when it is appropriate to speak in this discourse.' These conditions are governed by the role the discourse plays in the relations of power in a society."[99] Genealogy treats our past differently than traditional history. The kind of history genealogy advocates is "'effective' history (which) differs from traditional history in being without constants. Nothing in man - not even his body - is sufficiently stable to serve as the basis for self-recognition or for understanding other men."[100] Furthermore "[a] genealogy of values, morality, asceticism, and knowledge will never confuse itself with a quest for their 'origins,' will never neglect as inaccessible the vicissitudes of history."[101] Foucault's goal for

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[98]Michel Foucault, "Nietzsche, Genealogy, History," in Paul Rabinow, (ed.) *Foucault Reader* (New York: Pantheon, 1984), p. 85.

[99]Foucault, "Nietzsche, Genealogy, History" in *Foucault Reader*, p. 85

[100]Foucault, "Nietzsche, Genealogy, History," in *Language, Counter-Memory, Practice: Selected Essays and Interview*, p. 151

[101]Foucault, "Nietzsche, Genealogy, History," in *Foucault Reader*, p. 86

> genealogy does not resemble the evolution of a species and does not map the destiny of a people. On the contrary, to follow the complex course of descent is to maintain passing events in their proper dispersion; it is to identify the accidents, the minute deviations - or conversely, the complete reversal - the errors, the false appraisals, and the faulty calculations that gave birth to those things that continue to exist and have value for us.[102]

The things that "continue to exist" for Foucault, the things that he wishes to bring out into the open, are the "endlessly repeated play of dominations"[103] that make up our past. Foucault argues that "[h]umanity does not gradually progress from combat to combat until it arrives at universal reciprocity, where the rule of law finally replaces warfare; humanity installs each of its violences in a system of rules and thus proceeds from domination to domination."[104] Thus for Foucault, "knowledge is not made for understanding; it is made for cutting."[105] In conclusion genealogy reverses the notion of knowledge as the thing that will set you free; rather, "[k]nowledge or truth are no longer for Foucault, as they were for the humanists, the enemies of power, but are absolutely essential to its functioning."[106]

The Limit-Attitude

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[102]Foucault, "Nietzsche, Genealogy, History," p. 148. Quoted by Shumway, David R. (1989) *Michel Foucault*, Mass:Twayne Publishers, p. 111

[103]Foucault, "Nietzsche, Genealogy, History," in *Language, Counter-Memory, Practice: Selected Essays and Interview*, p. 148

[104]Foucault, "Nietzsche, Genealogy, History," in *Foucault Reader* , p. 88

[105]Foucault, *Discipline and Punish*, p. 136

[106]Shumway, p. 113

In the later eighteenth century Kant responded to an open call for papers on the subject, "What Is Enlightenment?" His answer was that "Enlightenment is defined by a modification of the preexisting relation linking will, authority, and the use of reason." Kant dared us to "have the courage, the audacity, to know." Kant thought that all humans have the ability to get into touch with a universalized reason that was deep within them and use it to create a mature society. For Kant maturity means "a state of will that makes us [not] accept someone else's authority to lead us in areas where the use of reason is called for."[107] Foucault argues passionately against such notions of any deep universalized reason within all humans. However, the Enlightenment is not unimportant for Foucault; on the contrary, he sees that "[w]e must try to proceed with the analysis of ourselves as beings who are historically determined, to a certain extent, by the Enlightenment."[108] Foucault wants us to give up the idea of a transcendental, quasi-divine project of Enlightenment and separate it from the attitude the Enlightenment holds for the self and the world. Foucault characterizes this attitude as a philosophical ethos he calls the *limit-attitude*. The limit-attitude is not to be taken as a

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[107]Michel Foucault, "What Is Enlightenment," in Paul Rabinow, (ed.) *Foucault Reader* (New York: Pantheon Books, 1984) p. 34. Here Foucault is defining immaturity, so I simply added the "not" to create a definition of maturity.

[108]Ibid, p. 43

> theory, a doctrine, nor even as a permanent body of knowledge that is accumulating; it has to be conceived as an attitude, an ethos, a philosophical life in which the critique of what we are is at one and the same time the historical analysis of the limits that are imposed on us and an experiment with the possibility of going beyond them.[109]

Through this attitude, Foucault embraces the type of criticism that "consists of analyzing and reflecting upon limits" and moves "beyond the outside-inside alternative."[110] This criticism consists of "a historical investigation into the events that have led us to constitute ourselves and to recognize ourselves as subjects of what we are doing, thinking, and saying."[111] The limit-attitude is the ongoing investigation or critical ontology of ourselves which is "a historico-practical test of the limits that we may go beyond, and thus as work carried out by ourselves upon ourselves as free beings."[112]

Foucault Summary

Foucault's brand of postmodernism is important and influential. Foucault established many interesting points in his analysis of the postmodern. He shows us that "human nature is always the construction of a particular culture and a particular

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[109]Ibid, p. 50
[110]Ibid, p. 45
[111]Ibid, p. 46
[112]Ibid, p. 47

time."[113] He shows us that the thoughts of past *epistemes* are not merely immature, "warped" or "twisted" versions of current thought, but rather alternative frameworks that produce different ideas and different people. He not only critiques predominant views of these *epistemes,* he also provides us with alternative "fictions" or histories of these periods. He shows us that "man is neither the oldest nor the most constant problem that has been posed for human knowledge."[114] He shows us the usefulness of using the names of things as the object of study instead of the natural object itself. He shows us that divisions of knowledge and objects of study are always cultural constructions and do not spring up from an inherited nature but rather from discursive practices. He shows us that the gaze shapes and creates the objects that we see so they cannot be attributed to some prediscursive reality. He asserts that archealogy and genealogy are important methods of understanding our current situation and finding clues in dealing with the current knowledge system. Finally, he suggests that through its first prophet, Nietzsche, a new *episteme* is in the making in which language would again cause the disappearance of man. Foucault will prove to be invaluable in the forthcoming analysis and postmodern approaches to education, most notably through his concepts of episteme, discourse, gaze, and the use of the name of things as the object of study instead of natural objects.

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[113]Foucault, *The Archaeology of Knowledge,* p. 139
[114]Ibid, p. 139-140

While Foucault's postmodernism has rather unique disciplinary roots which comprises a smaller subset of postmodernism; a far large group comes from the discipline of literary criticism. In the field of literary criticism, no one has contributed more to postmodernism than Jacques Derrida who has become almost an icon for postmodernism in the popular press. We will now turn to his work.

2C. Jacques Derrida

Jacques Derrida's contribution to the post-modern discourse is as vast as it is dense and sometimes opaque. Derrida parallels all post-modern work by arguing against essential Truth; specifically in his case, that a Truth can be abstracted from or is connected to a written text. He directly confronts and denies claims that one could write in a "scientific language" or any other logically consistent foundational language that is devoid of subjective influence and history. He attacks the philosophic endeavors that attempt to give an author such a language and by doing so "seeks to displace the assumption of authorial privilege."[115] His work directly attacks the great works that have been the source of this privilege and seeks to "show that texts are often not what they claim to be. Their rhetoric is often not supported by their logic."[116]

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[115]Walter Brogan, "Plato's Pharmakon: Between Two Repetitions," in Hugh J. Silverman (ed.) *Derrida and Deconstruction* (New York: Routledge, 1989), p. 10.

[116]Cleo H. Cherryholmes, *Power and Criticism: Poststructural Investigations in Education* (New York: Teachers College Press, 1988), p. 38.

In doing so Derrida often develops fine-grained analysis that at times becomes overwhelming to the reader. This is because "Derrida is interested not in the 'splendor of the simple' but, rather, in the lubriciousness of the tangled."[117] Derrida further postulates that this conflict between the author's logic and rhetoric is important to examine and is not a consequence of faulty writing but rather

> is a characteristic of language and writing, not simply a problem with specific texts or discourse. The ways in which rhetoric and logic diverge, contradict each other, reinforce each other, or remain ambiguous about the claims of the other provide insight into the effects and thrust of power and ideology in what we say and do.[118]

This review, at best partial, of Derrida's work is an attempt to articulate a sophisticated and large body of work. The following is a review either of work for which Derrida is most noted, work that has been used by authors looking at a postmodern education, or work that I will take up later within this study.

Truth in Text

The basic Derridian claim is that there is no essential Truth or structure that can be extracted from, contained within, hidden behind, or methodologically acquired from any text. All meaning is derived from the reader, not the writer, because the text's "...context is irretrievable and its meaning therefore a total

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[117]Rorty, p. 126
[118]Cherryholmes, p. 39

enigma."[119] There are those who have faulted Derrida for being the prophet that has lost our meaning, but "[h]e argues that philosophers have been able to impose their various systems of thought only by ignoring, or suppressing, the disruptive effects of language."[120] Writing has never been able to capture any origin within its signs; for, "[w]riting poses signs as substitutes for the intrinsically absent and nonlocatable origin, an origin, therefore, that is always other and different - an origin that is perpetually deferred by writing."[121]

Deconstruction

Derrida is most noted for his confrontational writing style, called deconstruction, with which he has "attempted to systematize a deconstructive critique precisely against the authority of meaning, as the transcendental signified."[122] Deconstruction is a complex set of strategies that "starts out by rigorously *suspending* this assumed correspondence between mind, meaning and the concept of method which claims to unite them."[123] By doing so, it "works to undo the idea - according to Derrida, the ruling illusion of Western metaphysics - that reason can somehow dispense with language and arrive at a pure, self-authenticating truth or

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[119]Christopher Norris, *Deconstruction: Theory and Practice* (New York: Methuen & Co., 1982), p. 71.
[120]Norris, p. 18
[121]Brogan, p. 11-12
[122]Jacques Derrida, *Positions* (Chicago: The University of Chicago Press, 1981), p. 49.
[123] Norris, p. 3

method."[124] Thus deconstruction, Derrida strongly asserts, is not a method because, unlike "methods it does not remove itself from its subject matter as a method does. Nor does it advocate a unitary position, deconstruction is plural, open; it is not an attempt to find essences or principles."[125] Deconstruction works the text against itself, locating the inevitable logical and rhetorical shortcomings due to the 'nature' of language. The goal of deconstruction is not to make a mockery of the work which it is used upon; rather, deconstruction "makes it possible to define more exactly the point at which thought encounters an *aporia* - or self engendered paradox - beyond which it cannot press."[126] Deconstruction is a challenge to the text and the text's implied comfortable assumption that there is truth here, a challenge that is "a positive technique for making trouble; an affront to every normal and comfortable habit of thought."[127] These strategies are positive techniques because they require "an activity of reading which remains closely tied to the texts it interrogates, and which can never [be] set up independently as a self-enclosed system of operative concepts."[128] However, it is an interventionist, parasitic, and confrontational strategy that "lies in wait for 'discourse' to stake its claims and

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[124]Ibid, p. 19

[125]Rudolphe Gasche, *The Tain of the Mirror: Derrida and the Philosophy of Reflection* (Cambridge, Mass.:Harvard University Press, 1986), pp. 8, 100 & 123. Quoted by Susan J. Hekman, *Gender and Knowledge Elements of a Postmodern Feminism* (Boston: Northeastern University Press, 1990), p. 24.

[126]Norris, p. 48-9

[127]Ibid, p. xi

[128]Ibid, p. 31

then it pounces on it, showing how much trouble this discourse has brought for itself by its boldness."[129] But it still is a positive technique because even though "deconstruction requires a prior project which it then inhabits and disrupts", its goal is not to scatter the project to the four winds, but rather to attempt to heighten its appreciation for its own difficulties.[130] The main strategy of deconstruction can be broken down into three steps:

1) identify the binaries, the oppositions that structure an argument;
2) reverse/displace the dependent term form its negative position to a place that locates it as the very condition of the positive term; and
3) create a more fluid and less coercive conceptual organization of terms which transcends a binary logic by simultaneously being both and neither of the binary terms.[131]

These "binaries" are what metaphysicians tend to work with that "draw rigid boundaries between what is acceptable and what is not, between self and non-self, truth and falsity...."[132] Derrida,

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[129]John D. Caputo, "Mysticism and Transgression : Derrida and Meister Eckhart," in Hugh J. Silverman (ed.) *Derrida and Deconstruction* (New York: Routledge, 1989), p. 30.

[130]Caputo, p. 31

[131]Patti Lather, "Deconstructing/Deconstructive Inquiry: The Politics of Knowing and Being Known, *Educational Theory*, vol. 41, no. 2, (Spring 1991), p. 172. Lather cautions us that it is difficult to "freeze deconstruction conceptually" in fact she deliberately places this "somewhat linear definition" in the footnotes "in order to displace the desire to domesticate deconstruction as it mover across the many sites of its occurrence."

[132]Terry Eagleton, *Literary Theory: An Introduction* (Minneapolis: University of Minnesota Press, 1983), p. 133. Quoted by Cherryholmes, p. 39.

armed with his strategies, has had an influence impact on the intellectual landscape throughout the world and through

> [h]is work provided a whole new set of powerful strategies which placed the literary critic, not simply on a footing with the philosopher, but in a complex relationship (or rivalry) with him, whereby philosophic claims were open to rhetorical questioning or *deconstruction*.[133]

In the wake of the impact of deconstruction, Derrida has attempted to be self-reflective of the implication of his work upon his own work by acknowledging and foregrounding the fact that "[d]econstruction is therefore an activity performed by texts which in the end have to acknowledge their own partial complicity with what they denounce"[134] and by admitting that the deconstructionist will "always in a certain way falls prey to his own work."[135]

Meaning Dispersal

Derrida asserts two arguments against the myth that meanings are fixed within texts. The first argument is that meanings are dispersed into a web of language. This dispersal of meaning turns structural assumptions against themselves in the following manner. In the structuralist paradigms, "the linguistic value of a

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[133]Norris, p. 21

[134]Ibid,, p. 48

[135]Jacques Derrida, *Of Grammatology*, (trans.) Gayatri C. Spivak (Baltimore: The John Hopkins University Press, 1974), p. 24. Quoted by Norris, p. 91.

word is determined by differences from and relationships to other words."

> In everyday life a dictionary is used to find differences and relationships among words. To the word *achieve*, for example, is assigned the definition "to bring to a successful conclusion: accomplish." Of course, one may wonder what definitions are attached to *conclusion* and *accomplish*. To *conclusion* is assigned "a reasoned judgment, the necessary consequence of two or more propositions taken as premises" or "result, outcome." To *accomplish* is assigned "to execute fully: perform" or "to attain to (a measure of time or distance)." A definition turns into a series of words, each with its own definition, and the chain of relationships extend indefinitely.[136]

In short, text has dispersed meaning, meaning that is not fixed or centered on a word but is instead dispersed through the semantic web of supporting words. This is not to say that language has no meaning. Rather it is to say that, even though "[l]anguage depends on 'difference' since, as Saussure shows once and for all, it consists in the structure of distinctive oppositions which make up its basic economy,"[137] thus meaning cannot be fixed.

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[136]Cherryholmes, pp. 36-37
[137]Norris, p. 32

Meaning Deferral

The second argument is that meaning is deferred in texts that can never be fully traced through the open-ended web of dispersed meaning; meanings must be deferred at some point in time. Cherryholmes further explains:

> An example of dispersed meanings is given by tracing meanings of a word to its definition, which is itself composed of words that have definitions, which are themselves composed of words, and on and on. If this search is considered in terms of the time it takes to complete the search, the meaning of *achievement* will not be decided until the meaning of *successful*, *conclusion*, and *accomplish* are determined. Determining the meaning of *achievement* is put off until yet a later time. But when will the meaning of achievement be decided? It is continually deferred into the future. Tracking meanings is not a closed-ended process. One consequence is that we are always waiting for definitive meanings. If we are always waiting for definitive meanings, the structuralist idea of definitive and fixed meanings is not reasonable or plausible.[138]

Dispersal of meaning, combined with the argument of deferral of meaning, is at the root of one of Derrida's most important concepts, *differance*, which will be taken up next.

Differance

Through these two concepts of dispersal and deferral of meaning Derrida fashions a new term that claims the confusion and ambiguity of these two concepts. What Derrida does is to fuse

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[138]Cherryholmes, p. 37

the two French words for to differ (*difference*)[139] and to defer (*deference*) into *differance*. With this fusion *differance* "remains suspended between the two French verbs 'to differ' and 'to defer', both of which contribute to its textual force but neither of which can fully capture its meaning."[140] Derrida defines *differance*

> as that which permits the articulation of speech and writing, it is the foundation of form: "'*Differance*,' the disappearance of any ordinary presence in *at once* the condition of possibility *and* the condition of the impossibility of truth." "*Differance*," *he claims*, is removed from all classical conceptual oppositions; it is both origin and non-origin at the same time: "To say that *'differance'* is originary is simultaneously to erase the myth of a present origin. . . . It is a non-origin that is originary.[141]

Differance is a hard concept to grasp because it is Derrida's attempt at relieving us of or rather getting us beyond the binary oppositions that define us as members of a Western logocentric culture. In doing so Derrida uses *differance*

> to think a writing without presence, without absence, without history, without cause, without *archia*, without *telos*, a writing that absolutely upsets all dialectics, all theology, all teleology, all ontology.[142]

The project is difficult because it has absolutely no referent to anything or any concept that most of us would use within our

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[139]To differ refers to the dispersal argument.
[140]Norris, p. 32
[141]Hekman, p. 25
[142]Ibid, p. 25

lives. Hekman describes *differance* as Derrida's attempt to create a concept which is "that which always escapes, is deferred in the attempt to define absolute knowledge of the presence."[143] Thus *differance* is not that which is but that which does and is revealed through "the movement of *differance* which always inhabits 'the pure actuality of the now'."[144] Derrida's goal of using *differance* is to intervene once again; it is, however,

> not aimed at locking us inside a play of signs but at making us think twice about claiming that our discourse has accomplished what it sets out to do. It throws a scare into our discourse, destroys a bit of the prestige and self-importance of 'reference,' and ends up creating a salutary distrust in the power of language to do what it sets out to do (along with providing an account of how language accomplishes what it does manage to do).[145]

Aporia

Deconstruction provides the reader with powerful strategies that render the authorial privilege impotent. Some American disciples of Derrida insist that through deconstruction we are "only trying to come closer to being as rigorous a reader as the author had to be in order to write the sentence in the first place."[146] This rigorous reading leads us to an important point, which Derrida calls *aporia*, which is inevitable after the demise of the myth of

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[143]Ibid, p. 25
[144]Norris, p. 47
[145]Caputo,p. 29
[146]Norris, p. 108

presence. A deconstructive reading "makes it possible to define more exactly the point at which thought encounters an *aporia* - or self-engendered paradox - beyond which it cannot press."[147] The concept originates with Nietzsche and has been found with Derrida's deconstructive readings of foundational texts of Plato, Levi-Strauss, Husserl, Rousseau, etc. as well as their methodologies. As de Man notes, "Nietzsche. . . advocates the use of epistemologically rigorous methods as the only possible means to reflect on the limitations of those methods."[148] "In the end it is only by confronting its limits - by forcing analysis to the point of *aporia* or self-contradiction - that thought comes up against the gap between itself and the aberrant 'logic' of the text."[149] Far from being considered a negative, as most certainly the original authors would contend, it is seen as a positive circumstance. For example, "[s]tructuralism and phenomenology are locked in a reciprocal *aporia* from which neither can emerge with its principles intact, but on which both depend for their moments of maximum insight."[150]

Open Web of Meaning

> One of Derrida's favorite 'metaphors' for deconstruction is weaving. . . . The web of writing is not constructed

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[147]Ibid, p. 48-9

[148]Paul de Man, *Allegories of Reading: Figural Language in Rousseau, Nietzsche, Rilke, and Proust* (New Haven, Conn.: Yale University Press, 1979), p. 115. Quoted by Norris, p. 105.

[149]Norris, p. 105

[150]Ibid, p. 51

> along the lines of simple hierarchies that interrelate fixed points that we call concepts and words. The woven text has a texture that stretches and shrinks, can expand, and can be grafted onto, can fold, warp, and unravel.[151]

This metaphor runs through the work of Derrida and is an important conceptual tool. This metaphor is also developed by the American deconstructionist Hillis Miller, who "reminds us of the affinity between 'text', 'texture' and the 'tissue of associative links which relate writing to the language of weaving and tapestry'."[152]

> The critic[153] adds his weaving to the Penelope's web of the text, or unravels it so that its structuring threads may be laid bare, or re-weaves it, or traces out on thread in the text to reveal the design it inscribes. . . .[154]

Derrida cautions us about any writer's attempt at or claim to assess the entire web, especially under guise of objectivity.

> There is always a surprise in store for the anatomy or physiology of any criticism that might think it had mastered the game, surveyed all the threads at once, deluding itself, too, in wanting to look at the text without touching it, without laying a hand on the 'object,' without risking - which is the only chance of entering into the game, by getting a few fingers caught

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[151]Brogan, p. 12

[152]Norris, p. 95-6

[153]Also read deconstructionist

[154]J. Hillis Miller, *Thomas Hardy: Distance and Desire* (Cambridge, Mass.:Harvard University Press, 1970), p. 36.

> - the addition of some new thread. Adding, here, is nothing other than giving to read.[155]

Derrida's challenge is clear: we can no longer observe and read from the outsider via objectivity, we must jump into the web of the text and describe, change, add, shrink, extend, and delete the threads of the text.

Supplementary Logic

Supplementary logic, for Derrida, is a means to displace and do away with the old binary oppositions that are so much a part of Western thought. The *supplement,* rather than adjusting the valorized half of the binary or reversing the valorization of the binary, tries to find a term that is a middle ground - a term that shows plurality and multiplicity and "reveals that what we have defined as opposites invade and inhabit each other."[156] Derrida points to the question of surplus,

> The question of the surplus hidden within the examples entails a system however, for Derrida, and a system that entails what he calls, an-other *logic.* This is the logic of supplementarity . . . [n]amely, the condition of the possibility of reading examples otherwise hinges on a certain untamed... and untamable, non-masterable excess, that although susceptible of being framed and

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[155]Jacques Derrida, *Dissemination,* (trans.) Barbara Johnson (Chicago: University of Chicago Press, 1981), p. 63.

[156]Hekman, p. 174-5

> hence made visible, cannot thereby entirely be brought into the light of day, of reason.[157]

Derrida creates a supplementary logic through the use of terms like "pharakon, hymen, *differance*, writing, spacing, trace."[158] The two strong forces in the attempt at supplementary logic for Derrida are the "woman" and writing. He considers each of these to be a disruptive force that "provides a means of breaking apart the binary logic of the metaphysics of presence"[159] - women because they are a force that is historically associated with the un-valorized half of the binary opposition,[160] and writing because "[w]riting is the example *par excellence* of a supplement which enters into the heart of all intelligible discourse and comes to define its very nature and condition."[161] It is at the heart of intelligible discourse because "[t]he supplement is that which both signifies the lack of a 'presence', or state of plenitude forever beyond recall, and *compensates* for that lack by setting in motion its own economy of difference."[162] In summary, supplementary logic is the attempt to find an "interval" between the binary opposition that overthrows its polarities in favor of terms that acknowledge plurality and multiplicity.

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[157]Irene E. Harvey, "Derrida, Kant, and the Performance of Paragonality," in Hugh J. Silverman (ed.) *Derrida and Deconstruction* (New York: Routledge, 1989), p. 62.

[158]Hekman, p. 171

[159]Ibid, p. 170-1

[160]Nature on the nature/culture binary, irrational on the irrational/rational binary, subject of the subject/object binary, etc.

[161]Norris, p. 33

[162]Ibid, p. 37

Open, Free Play of Plural Communication

The work of Derrida can be characterized by the intense desire to release the language from the metaphysician's attempts to fix Truth within text and instead recognize language as an open, free play of pluralized meaning. Derrida is not insistent that we throw out the themes of Western metaphysics that "run deep in the logic and communicative structure of language, so deep indeed that to break with them entirely would be to risk madness or total non-communication."[163] In fact Derrida argues:

> To think without the aid of such figurative props may well be beyond the powers of mind. To accept them, on the other hand, without deconstructing their effects is to risk being interested in the figure itself to the detriment of the play going on within it metaphorically.[164]

The project of writing and reading that Derrida wishes to foster is one that "wants to find words which get us 'beyond' metaphysics - words which have force apart from us and display their own contingency."[165] A project that creates a "*style* of philosophic writing which remains intensely skeptical of all claims to truth - its own included - and which thus opens up the

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[163]Norris, p. 57

[164]Jacques Derrida, *Writing and Difference*, (trans.) Alan Bass. (London: Routledge & Kegan Paul, 1978), p. 16.

[165]Rorty, p. 123

possibility of liberating thought from its age-old conceptual limits."[166]

This project "is not some 'alternative' logic of figurative language but an open plurality of discourse where all such priorities dissolve into the disconcerting 'free play' of signs"[167] that celebrates "a move to an affirmative thought of disjunction and multiplicity."[168] Furthermore, this is a conception of writing and reading in which

> "there is nothing but text, there is nothing but extratext, in sum an 'unceasing preface' that undoes the philosophical representation of the text, the received opposition between the text and what exceeds it. The space of dissemination does not merely place the *plural* in effervescence, it but shakes up an endless contradiction, marked out by the undecidable syntax of 'more'.[169]

Derrida does this in many ways, including the examination of meaning's dispersed and deferred properties, the deconstruction of the myth of presence that conceives of good writing and the valorization of speech or writing. This is also done through the location of *aporia*, the valorization of supplementary logic, or through graphical means with

> the device of placing words *sous rature* or 'under erasure', signified by crossing them through in the text

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[166]Norris, p. 68
[167]Ibid, p. 67
[168]Ibid, p. 49
[169]Jacques Derrida, *Dissemination*, p. 11

> and thus warning the reader not to accept them at philosophic face value. Thus, in *Of Grammatology*: "the sign ~~X~~ that ill-named ~~thing~~ the only one that escapes thin instituting questions of philosophy."[170]

The marks of erasure acknowledge both the *inadequacy* of the terms employed - their highly provisional status - and the fact that thought simply cannot manage without them in the work of deconstruction. "By this graphic means, much akin to the anomalous spelling of *differance,* concepts are perpetually shaken and dislodged."[171] "The endpoint of deconstructive thought, as Derrida insists, is to recognize that there is no end to the **interrogative play** between text and text."[172] The use of Nietzsche's "image of writing as a 'dance of the pen' is one to which Derrida often reverts in order to suggest this free play of sense."[173] He transforms writing into

> Derrida's style of writing. . . [which] is performative rather than informative. It doesn't so much inform us about what Plato says as actively repeat the activity of writing the text by incisively cutting into the Platonic text at a point where the text is open to a moment of alterity and from which divergent paths through the texts can be pursued.[174]

Derrida Summary

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[170]Jacques Derrida, *Of Grammatology,* p. 19
[171]Norris, p. 69
[172]Norris, p. 84
[173]Brogan, p. 11
[174]Ibid

Derrida's status, reputation, and contribution to postmodernism is immense. His style of writing, deconstruction, along with the notions of dispersed and deferred meaning, differance, aporia, supplementary logic, and free play of communication serves as extremely important concept in the postmodern. They will also be useful in working with the postmodern effects of information technology on meaning. Another postmodern theorist that will prove to be important in any discussion of postmodern theory and its relationship to information technology is Jean-Francois Lyotard. We will turn now to his work.

2D. Jean-Francois Lyotard

Jean-Francois Lyotard begins his book, *The Postmodern Condition: A Report on Knowledge* with the line, "The object of this study is the condition of knowledge in the most highly developed societies."[175] His analysis is that knowledge is in a postmodern condition that is most notably the "incredulity of the meta-narrative."[176] Lyotard is a particularly important character in this study for a number of reasons. Crucial among them is his direct addressing of and drawing the connections between the concepts central to this work, namely, postmodernism, education, and information technology (computers). Together with these central

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[175] 1st line of Jean-Francois Lyotard, *The Postmodern Condition: A Report on Knowledge* (Minneapolis: University of Minnesota Press, 1979), p. xiii.
[176] Lyotard, p. xxiv

concepts, Lyotard weaves the concepts of performativity, postmodern science, paralogy, and differend into an interesting web of thought, a web that, although sometimes confusing and often controversial (I will take up the a controversy below), is nevertheless an important work.

Delegitimation of Modern Science

In the era of the "incredulity of the meta-narrative," the modern scientific endeavor is quickly called into question. In fact,

> the "crisis" of scientific knowledge . . . [is] itself an effect of progress in technology and the expansion of capitalism. It represents an internal erosion of the legitimacy principle of knowledge. There is erosion at work inside the speculative game, and by loosening the weave of the encyclopedic net in which each science was to find its place, it eventually sets them free.[177]

The question, for Lyotard, under these conditions becomes: "What becomes of science, and the society which so deeply relies upon it. . . when its project is delegitimized?"[178] Lyotard's answer is that the "(language) game of science is thus put on a par with the others."[179] Science is not eliminated or thrown away; however, it does lose its hierarchical superiority and becomes just another possible language game - a game that is "incapable of legitimating itself" let alone "legitimating the other language games." Society is

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[177]Ibid, p. 39

[178]Mark Poster, *The Mode of Information: Poststructuralism and Social Context*, (The University of Chicago Press: Chicago, 1990), pp. 143-4.

[179]Lyotard, p. 40

freed from the terror of the scientific synthesis and acknowledges that "[t]he social bond is linguistic, but is not woven with a single thread [the thread of scientific knowledge]. It is a fabric formed by the intersection of at least two (and in reality an indeterminate number) of language games obeying different rules."[180] Society may despair over the loss of the meta-narrative to organize themselves and choose their authorities. However, Lyotard notes that "what saves them from it is their knowledge that legitimation can only spring from their own linguistic practice and communicational interaction"[181] and the knowledge that historically science's legitimation was only derived in the same manner, through their own linguistic practices.

Rise of Performativity

In this new configuration, science turns in on itself and "plays its own game."[182] When science, as a language game, does this there are two important changes in it language games: "a multiplication in methods of argumentation and a rising complexity level in the process of establishing proof."[183] With the first change, sciences must now compete in the plurality of argumentation languages that "each must formulate its own rules and petition the addressee to accept them."[184] This leads to two

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[180]Ibid, p. 42
[181]Ibid, p. 41
[182]Ibid, p. 40
[183]Ibid, p. 41
[184]Lyotard, p. 42

forms of "progress in knowledge: one corresponds to a new move (a new argument) within the established rules; the other, to the invention of new rules, in other words, a change to a new game."[185] The second change in science is the reversal of the relationship between technology and science. As the cost of the complex technologies (the machines) of proof increase, science becomes entangled with the input/output rationale of the performativity equation, which becomes the standard that is used to judge good research. Thus, instead of research "mastering" reality, research begins to support the efficient use of technology to enhance performativity, and thus power. When what happens is the "research sectors that are unable to argue that they contribute even indirectly to the optimization of the system's performance are abandoned by the flow of capital and doomed to senescence."[186]

Education is also susceptible to legitimation through the performativity criterion. Lyotard's view of education is the transmission of knowledge for the benefit of the nation; but more importantly for science, education is a matter of creating equals (other scientists) to be addressees for scientists' proofs.[187] Therefore education becomes just a cog in the system. Lyotard explains, "The transmission of knowledge is no longer designed to train an elite capable of guiding the nation towards its

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[185]Ibid, p. 43
[186]Ibid, p. 47
[187]Ibid, p. 24

emancipation, but to supply the system with players capable of acceptably fulfilling their roles at the pragmatic posts required by its institutions."[188] Lyotard goes on to implicate the very structure of what we now know as the institution of education. In this restructuring,

> knowledge will no longer be transmitted *en bloc*, once and for all, to young people before their entry into the work force: rather it is and will be served 'a` la carte' to adults who are either already working or expect to be, for the purpose of improving their skills and chances of promotion. . . .[189]

For education, in the final analysis, Lyotard sees the "sounding of the knell of the age of the Professor: a professor is no more competent than memory bank networks in transmitting established knowledge, no more competent than interdisciplinary teams in imagining new moves or new games."[190]

Postmodern Science

A postmodern science is not one based on the performativity criterion or any notion of Truth. It is a "move" that modern scientists can make to continue their "game," but the "pragmatics of postmodern scientific knowledge per se has little affinity with the quest for performativity."[191] The primary reason for this is

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[188]Ibid, p. 55
[189]Ibid, p. 56
[190]Ibid, p. 53
[191]Ibid, p. 56

that "[t]he idea of performance implies a highly stable system because it is based on the principle of a relation, which is in theory always calculable, between heat and work, hot source and cold source, input and output."[192]

The notion of this highly stable system has come increasingly under fire through argumentation originating from quantum mechanics, atomic physics and chaos theory. The first argument is the inability to define the initial state of a system or all the independent variables because such a definition would require an expenditure of energy at least equivalent to that consumed by the system to be defined.[193] A second argument is that "[t]he quest for precision is not limited by its cost, but by the very nature of matter. It is not true that uncertainty (lack of control) decreases as accuracy goes up: it goes up as well."[194]

> The conclusion we can draw from this research is that continuous differentiable function is losing its preeminence as a paradigm of knowledge and prediction. Postmodern science - by concerning itself with such things as undecidables, the limits of precise control, conflicts characterized by incomplete information, '*fracta*,' catastrophes, and pragmatic paradoxes - is theorizing its own evolution as discontinuous, catastrophic, nonrectifiable, and paradoxical. It is changing the meaning of the word *knowledge*, while expressing how such a change can take place. It is producing not the known, but the unknown. And it suggests a model of legitimation that

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[192]Ibid, p. 57
[193]Ibid, p. 55
[194]Ibid, p. 56

> has nothing to do with maximized performance, but has as its basis difference understood as paralogy.[195]

Reflecting on the definition of a scientist, Lyotard points out that

> P. B. Medawar, for his part, has stated that '*having ideas* is the scientist's highest accomplishment,' that there is no 'scientific method,' and that a scientist is before anything else a person who 'tells stories.' The only difference is that he is duty bound to verify them.[196]

Information technology and Postmodernism

Lyotard examines the relationship of information technology and postmodernism, but not as this study will try to do by combining the two towards some ends (in this case an educational environment). Rather, Lyotard argues that computers[197] have been one of the many forces initially contributing to and increasing the pace of the destabilization of knowledge which is subsequently bringing us towards a postmodern condition. This destabilization can be seen at the two sites in which knowledge functions, which are, for Lyotard, the acquisition of knowledge or research and the transmission of acquired learning.[198]

In research, as the scientist attempts to create more and better data on which to base conclusions, the "technical devices originated as prosthetic aids for the human organs or as

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[195]Ibid, p. 60

[196]Ibid, p. 60

[197]Computers being the primary, or most talked about information technology; but by no means the only one (ie. books, video, tv, radio, etc.).

[198]Lyotard, p. 48

physiological systems whose function it is to receive data or condition the context."[199] Now in the postmodern era without a foundation on which to collect data, the scientist's search for more and better data has placed technology as the self-justifying end where improving the input/output ratio becomes the only legitimacy that is needed. Its progress is only measured on the path of better, more "sophisticated" amounts of data for the money, because once it has been set in motion it continues regardless of the crumbling or the destruction of its original ends that were based in notions of Truth, Nature, or Reality.

In learning, the "miniaturization and commercialization of machines is already changing the way in which learning is acquired, classified, made available, and exploited."[200] Lyotard goes on to state that

> It is reasonable to suppose that the proliferation of information-processing machines is having, and will continue to have, as much of an effect on the circulation of learning as did advancements in human circulation (transportation systems) and later in the circulation of sounds and visual images (the media).[201]

Computers have commodified knowledge into the form of information "bits" which through its new and increasingly complex channels and sources create a condition in which knowledge is becoming fluid and plural. Lyotard is often elusive about the role

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[199]Ibid, p. 44
[200]Ibid, p. 11
[201]Ibid

of computers in the postmodern era, making broad statements about the computer without giving adequate arguments and examples. Poster notes this confusion that Lyotard at times brings to the issue of computers and the post modern: "He (Lyotard) is. . . very ambivalent about this role, at times configuring the computer as the culmination of modern metanarratives and social practices, at other times crediting computerization with promoting postmodernism."[202]

Paralogy

Lyotard considers the concept of paralogy as the new legitimizing force of the post-modern era. Paralogy is closely related to Kuhn's concept of revolutionary science. That is, paralogy is "the [constant] search for new ideas and concepts which disrupt and destabilize previously existing consensuses."[203] Normal science no longer is the desired goal of the scientific endeavor. Rather as Lyotard has "shown in the pragmatics of science, consensus is only a particular state of discussion, not its end. Its end, on the contrary, is paralogy."[204] Further delineating the concept, Lyotard states,

> Paralogy must be distinguished from innovation: the latter is under the command of the system, or at least used by it to improve its efficiency; the former is a

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[202]Ibid, p. 4

[203]J.M. Fritzman, "Lyotard's Paralogy and Rorty's Pluralism: Their Differences and Pedagogical Implications," *Educational Theory* , vol. 38, no. 2, (Summer, 1990), p. 372.

[204]Lyotard, p. 65-6

> move (the importance of which is often not recognized until later) played in the pragmatics of knowledge.[205]

Postmodern science not only creates new knowledge, but its goal is to constantly be looking to undermine the language games under which current science is conducted by changing the rules by which it is played.

The *Differend*

In his book: *The Differend: Phrases in Dispute*,[206] Lyotard examines a difficulty that is created in the postmodern era with regard to disputes. In the modern era of Truth, a dispute would be argued "rationally" between two opposing parties and resolved through some "enlightened" procedure and/or criteria. In the postmodern era there is no such procedure or criterion "outside of ourselves" that we can rely on to resolve a dispute. In some cases, in the postmodern era, when we will have a dispute both parties will hold or agree upon a mutually acceptable set of procedures and criteria that can easily simply replace the "True" set of procedures and criteria so that a resolution can similarly be made, and thus there would be little difference in the results.[207] However in the postmodern era there will be cases in which the two parties cannot or will not agree on such a set of procedures

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[205] Ibid, p. 61

[206] Jean-Francois Lyotard, *The Differend: Phrases in Dispute*, (trans.) Georges Van Den Abbeele, (University of Minnesota Press, Minneapolis, 1988).

[207] Although there would be a different commitment to the results.

and criteria. Any attempt to resolve the dispute will mean creating a set of procedures and criteria that will then "necessarily wrong at least one of the parties."[208] For Lyotard when a common set of procedures and criteria can be found the dispute can be handled through *litigation,* whereas in this second example when no common set of procedures and criteria can be found to resolve it, the dispute is called *differend.* The *differend* is a situation where the two or more disputants do not agree on the basic set of procedures and criteria to resolve the issue. In such cases, we cannot rely on a

> politics of the good [which would] privilege a certain set of criteria, and so would wrong at least one party. Instead of a politics of the good, Lyotard believes that a politics of the lesser evil must be developed. A politics of the lesser evil will not forget that there are differends which cannot be transformed into litigations, and so will seek to make decisions that minimize the wrongs that necessarily occur. A politics of the lesser evil will attempt to leave open as wide a set of political options as possible.[209]

Lyotard Summary

Lyotard takes an interesting and strong look at the educational, scientific, and technological implications of postmodernism. This along with paralogy as the new source of legitimation and differend as a mechanism to gain new insight into understanding conflicts between competing

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[208]Fritzman, p.376

[209]Ibid, p.378: emphasis added

discourses helps us in our approaches with the conceptual terrain of the postmodern era.

2E. Postmodern Theory Summary

This concludes my review of postmodern theory. This has by no means been a complete overview, but rather an overview of the intersection that I have identified between postmodern theory, education and computer technology. In conclusion I will explain my selection of these particular four authors and then foreshadow their merging together into a theory that can address a postmodern education.

Rorty, Foucault, Derrida, and Lyotard are the four "authorities" that I have selected to use as a "foundation" for this postmodern education. Rorty was selected primarily because of the completeness and clarity of arguments. Rorty has taken and struggled with the ideas and issues of postmodernism as all postmodernists must do; however, the uniqueness I find is that he is able to take this struggle and create a supported set of ideas and practices that can help us with the living of our lives. He does this in a relatively accessible way, especially given the backdrop of many of the other postmodernists, whose writing are notoriously aloof, self-satisfied, jargon-rich, and convoluted. The following educational theory has been better described as "post-Rorty" for its strong reliance on Rorty's work. However, I do not want to cast my work with such a label because, although Rorty's theory does fit well into my conceptualization, I find that almost every time

Rorty writes on education I find myself disagreeing with him.[210] Furthermore, Rorty misses important distinctions that are important to this project, and that the other theorists provide.

Foucault adds a deep understanding of the study of discourse, as opposed to the "objects" that discourse was said to be about. This distinction will be an important centerpiece for my work. Although, Foucault's work as a whole is somewhat divergent, the implications of his work for education are just beginning to be understood.[211] Foucault's conceptions of *episteme*, the *gaze*, archaeology, and genealogy greatly expand, broaden and deepen our understanding of the historicist turn that Rorty articulates. The limit-attitude will be an important linking concept in our understanding of ourselves as partly determined by the Enlightenment.

Derrida was chosen on several grounds: first, he has almost become an icon for postmodern theory; second, his strategy of deconstruction is widely discussed in the postmodern community; third, his concepts of *differance*, *aporia* and supplementary logic will be important within this study; and fourth, the conceptual parallels between Derrida's open web of meaning and computer application under the label of hypermedia are striking and will be explored in later chapters.

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[210]This will be illustrated in later chapters.

[211]For example see Stephan J. Ball, (ed.) *Foucault and Education: Disciplines and Knowledge* (New York: Routledge, 1990).

Lyotard was chosen because of his direct connection with the three major themes of this dissertation: computer technology, postmodern theory, and education. His notion and critique of science and the rise of performativity are also extremely important to the discussion of computer technology in education as well as society in general. The use of paralogy as a new legitimating force within the postmodern will also be explored within education. His concept of differend will prove to be an important concept for the pluralism that is definatory of the postmodern and thus a postmodern education. However, I think that Lyotard is off the mark to some degree with his assessment of the end of the "age of the Professor." I believe that the Professor will remain in the era of a postmodern education; however, the reverence and authority that was once automatically bestowed on a Professor has been reduced, and in that sense we may be at the end of the "age of the Professor" and instead we may be entering into the age of the professor.

In a reflection on those authorities chosen it is also important to discuss those authorities that were not chosen. I considered including Nietzsche early on in planning this dissertation. This addition would have been made as an attempt to cast him as one of the "founders" of this mode of thought. It is well recognized that Nietzsche was a major influence on many postmodern thinkers - on Foucault especially and Rorty in a specific way. I decided that his work was best represented within my work

through his influence on the authors that I have chosen instead of any direct reference to his work.

The other authority that I chose not to include was the postmodern feminist perspective. This was a difficult choice to make because my scholarly development has been strongly influenced by feminists who were interested in postmodernism. This choice was rooted in my inability to use the exciting contribution that postmodern feminists have made to postmodernism in general. The reason that I have not included their work within this dissertation was my lack of ability to see a direct connection to this project at this stage of development. There is an indirect inclusion of the feminist in general through the view of knowledge as contingent and historically created. I think that my future work will and should more directly explore the possibilities and implications of postmodern feminism. In conclusion, feminism while it may not be directly represented in this dissertation, has undoubtedly had a major influence on the texture of this dissertation.

This concludes the chapter reviewing postmodern theory. It was my goal to bring to the reader a well-rounded exploration of postmodern theory through the four different perspectives of Rorty, the ex-analytical philosopher; Foucault, the historian; Derrida, the literary critic; and Lyotard, the eclectic. This introduction to postmodernism is by necessity partial and incomplete and should not be misconstrued as an attempt to

conceptually freeze "the as yet unnameable" field of postmodernism. Yet I hope this introduction will give the reader a grounding in the terms and ideas of postmodernism so that the work that follows can be more easily understood and be foregrounded within my particular understanding of postmodern theory. With this introduction, I will, in the next chapter, outline three implications of postmodern theory for what we call education.

CHAPTER III

POSTMODERN IMPLICATIONS FOR EDUCATION

To many readers, concepts contained in the first section of this dissertation may frustrate, bewilder, and confuse their sensibilities, as they have and continue do to me and others interested in the "postmodern." It is also necessary to remember, both for readers and myself, that while an overview may help in understanding and improving accessibility to postmodernism, it cannot freeze postmodernism conceptually. Postmodernism is a dynamic and ever changing, mutating set of ideas, connections, words, people, and practices. The previous section has identified the destabilizing effects of postmodernism on the basic assumptions in all fields of study. This section will now take the concepts developed by these postmodern theorists and examine their implications in the domain we call education.

These educational implications of postmodernism have been organized under three categories. They are: 1) A crisis of representation; 2) A crisis of authority; and 3) A crisis of subjectivity. Woven through these three organizational catagories are five basic educational questions that I will also address in this

chapter. They are: 1) What do we teach?[212] 2) Why do we educate? 3) How do we educate? 4) Who is the educator? and 5) Whom do we educate?

3A. Crisis of Representation

The crisis of representation challenges essentialistic, realistic, foundationalistic theories of Truth (e.g. the divine theories of Western religion or the enlightened theories of science). These theories state that words are abstracted out of nature by scientists or delivered from somewhere outside of ourselves by prophets; these words can mirror or represent nature, and then can be mirrored within people's minds. These representations in our minds and words are reflections of the structure or framework of knowledge that is objective, ahistorical, cross-cultural, apolitical, and gender neutral. The postmodern theorist rejects these theories and suggests that our words are historical artifacts that are constructed from our historical contingencies (Rorty), our current *episteme* and discourse (Foucault), or the current web we are caught in (Derrida). Thus the representations we have of the world within our minds or within our words are not based in or

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[212]It is interesting to note that this question, "What do we teach?" is the only one where I could not substitute educate for teach. I was trying to do this to discuss the larger question of education instead of the smaller one of teaching. "What do we educate?" cannot replace "What do we teach?" The first seems to be a poorly worded version of "Whom do we teach?" with the answer being students or learners or something like that; whereas the answer to "What do we teach?" is content, subjects or something similar. What does this mean? Could it represent the necessity of teaching to have a content? I am not sure; however, it is an interesting happening.

extracted from some Truth "outside of ourselves," but rather constructed from within historically situated knowledge communities. Derrida's deconstruction of the myth of presence is arguably the strongest contributing force in this crisis of representation, specifically as it relates to a Truth within text.

What does this mean for the institutions, practices, and theories of education? Challenging major writers on education, this postmodern crisis of representation problematizes three traditional answers to the basic educational questions: 1) What do we teach? 2) Why do we educate? and 3) How do we educate?

What do we teach? In education we teach the Truth that has been given to us by the prophets or the scientists.[213] Why do we educate? We educate because if our students' minds mirror the Truth, they will be more powerful, wise and obviously more productive in our society. Thus educated people will be a benefit to themselves and to us. How do we educate? Our goal is to base our educational methods on the Truths that have been given to us by the educational prophets or the scientists. These True methods would impart the Truth to learners in the most efficient and effective manner. Once discovered, these True methods could be

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[213]Obviously this is not all that is taught in traditional education; some things are taught that are not Truth but simply things that are interesting, useful, entertaining, or "just the way we do things." However, these things are marginalized within "true" academics.

handed down to the practitioners (the teachers)[214] by the scientists to implement.

Under the crisis of representation these traditional answers reveal themselves as illusions and myths that are impossible to ground in anything that is outside of ourselves. I will address these questions in a different order, reversing the "What?" and the "Why?" This reordering is a foreshadowing of the educational implications of postmodernism, for the "What?" can now only be seen in the context of the "Why?" or the political, historical context out of which the "What?" has emerged. The "Why?" becomes the important question in a postmodern education and implicates all other questions.

Why do we educate? Foucault's analysis reveals modern education's answer to "Why do we educate?" is a myth created from within our modern *episteme*. This myth of the altruistic teacher imparting the great Truth to the next generation is caught up in a complex relationship of power, control, and discursive practices. It starts with the rigid control of the body and works through every aspect of the students' lives. Instead of getting in touch with the Truth, this myth transpires into the powerful's attempts to normalize the *gaze*, create able bodies, meticulously differentiated individuals, and create fellow community members

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[214]Teaching is often not done in this manner, and because of this has been labeled a craft profession. But this is seen as a major shortcoming in the profession and overcoming it is considered one of the major goals of the profession.

who can validate each other's truths. After this analysis, the modernist goal, to increase individual aptitude, remains intact. Paradoxically, this altruistic goal is held for the individuals' and society's benefit. However, as Lyotard observes, education becomes the process whereby an individual is molded into a cog that will fit into a performative position within society, and increase the performance of the social system. Society benefits by an increased output/input ratio of the system; and the individual benefits by being provided a way to fit into the "system" and thus not be crushed by it. In short, we educate to create and dominate our citizenry, which allows us to increase the output/input ratio of the system. Or put another way, education provides society with discursive practices to inscribe their citizenry with the notion to "adapt your aspirations to our ends - or else."[215] In the postmodern era, education will have to recognize and represent the fact that education is a power-constituting and power-constituted endeavor. This will include the formulation of discursive practices that will provide a space where students can create positions other than that of a target of power, control and domination.

What do we teach? Teaching the Truth is an impossibility in a postmodern conception of education because the postmodernist rejects the very notion that there exists a Truth. Instead, the postmodernist views truths as "useful lies" and a sort of violence

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[215]Lyotard, p. 64

that we do to the world and to each other. The pressure leading us to this view of truth has largely come from the Other, those marginalized voices that have found that the language of modernity has become increasingly irrelevant to their lives. Furthermore, the Other sees the universal Truth and the language that represents it as a violence to those who had no voice in its creation. These marginalized voices include women, African-Americans, Hispanics, Native Americans, gays, lesbians, otherly abled persons, or overweight people, to name only a few. This pressure pluralizes and multiplies any notion of Truth into truths that recognize that they are partial, locally, historically, and politically constructed within a situated knowledge community. Thus the "What?" is implicated in the contingencies of the historical politics and power structures that determined the "Why?" The postmodern implication for the question "What do we teach?" is that we must abandon the Truth and substitute truths, while foregrounding the politics and power structures which have made up their constitution.

Furthermore, Foucault's method of reversal creates another "What?" to study. For example, we no longer look at the human sciences as a unified study of the human condition, but rather as a history of vocabularies we have used on humans to explain them. Thus within a postmodern education we have constituted a new object of study, these vocabularies, which are derived from parts of the world that we have studied. This then becomes another

part of the "What" in a postmodern education and is added to the open web of meaning, a part that can be studied apart from its correlated part of the world.

How do we educate? Once again, the postmodernist rejects any claims of the educational scientist's ability to get in touch with the Truth about universal, ahistoric teaching methods and objectives, cross-cultural instructional strategies. However even when the postmodernist rejects Truth as the basis for educational methods, Lyotard argues that, "How do we educate?" is still governed by the performativity standard. Truth is simply replaced with the truth of the particular knowledge community, and methods are judged by their ability to impart these truths into the minds of learners in the most efficient and effective way. Educational methods are the creation of pragmatic methods or discursive practices to impart the truth of the current epistemes. A postmodern education must reject the notion of grounding the answer to the question "How do we educate?" in the Truth, but furthermore must find a substitute that does not simply modify the modern standard of performativity for the postmodern situation.[216]

The crisis in representation severely problematizes these traditional answers to the basic educational questions. What does a postmodern educator do with these implications? In the next

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[216]Why this should be done will be discussed at the end of this section on Authority.

section I will explore some possible approaches; but first, I will examine the crisis of authority in postmodern education.

3B Crisis of Authority

The crisis of authority is directly derived from the crisis in representation and addresses a fourth fundamental question of education: Who is the educator? Once again, I will first explore traditional views of who does the teaching in the past. Quite obviously, it is teachers who have the nessessary expertise: first, they have mastered the Truths of a given content or contents (what to educate); and second, they have mastered the Truths of the educational scientist on method and strategies (how to educate). Within these two areas of expertise, educators ground their authority to intervene into student lives. Authority and power were gained because if there was a Truth, having the Truth was better than not having the Truth. Therefore, a community or country would be better if their citizenry had the Truth than those communities that did not have the Truth. Secondly, if a specific type of person could impart the Truth to others more efficiently and effectively than they could obtain it by themselves, then that specific type of person would be valuable to his/her community. Furthermore, once that type of person could be identified, the community would bestow to them the authority to intervene in the citizens' lives to impart the Truth so that the community and the individual would become better and more powerful. Thus, the

authority of the teacher was established by: 1) a community valuing the Truth, 2) the ability of the teacher to attain the Truth, 3) documenting a segment of a community's ignorance of the Truth, 4) the ability of the teacher to attain the True or most efficient and effective educational methods, and 5) the demonstration that the teacher has imparted the Truth to the learners.

The crisis of authority is created when teachers lose their claims that connect their authority to the Truth because, once again, postmodernists reject the notion of Truth. This loss of the Truth effects all five stages of the teacher's authority. First, the loss of the Truth leaves the teacher with only truths, whose lesser value is situated and partial rather than universal. Second, the teachers themselves have only obtained partial truths that are situated within the context of their lives. Third, while documenting the learner's ignorance of the teacher's particular truths would still be the same, this would necessarily imply an additional assumption that the learner's current constructed truths are inadequate and should be marginalized. Furthermore, terms of ignorance and wisdom as well as their criteria of determination are revealed as political, cultural, historical, and power-laden constructs that only make sense in their particular political, cultural, historical, and power-laden context. Fourth, the authority of educational methods would be undermined because any measure of efficiency would be undergirded by a culturally

defined, overdetermined system or "cult of efficiency." Even the teachers' attainment of these methods would be a personal construction of these community-situated methods, as noted previously. The fifth stage would be the stage least affected by the loss of the Truth, for demonstrated attainment of teachers' truths would be similar[217] to demonstrated attainment of universal Truth.

The crisis of authority erodes our ability to intervene into students' lives at all five stages of a teacher's authority. We lose our ability to say to the public that we can impart the great Truths of the world to our students, and all that is left in this framework is to say that an individual teacher can impart her/his own constructed truths with his/her socially situated methods of educating.[218]

This alone greatly reduces educators' authority, but furthermore, this crisis destabilizes the mainstay of the educational institution, that is, the creation of the certified teacher. We no longer have the authority to certify teachers that meet the two criteria of teaching (content expertise and education/teaching expertise). Because in the postmodern era there is no objective criterion we can set, the notion of setting criteria is situational, contextual, local, political, multiple, and pluralistic. We are losing

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[217]It would be similar but not exact, for a True measurement of student attainment could not be judged.

[218]It will be argued later that even this framework will be insignificant to a postmodern education.

the social authority to create and certify "teachers" as they meet the objective criteria of teachers. In short, philosophically, if not practically, we have lost our objective teacher mold.

Lyotard argues that in education we have already moved into the postmodern era in this respect and have found an alternative source of legitimacy and authority. Although it has not been "found" or "divinely inspired," it is a source of authority that is simply a modification of an old source of authority, namely performativity. When the experts of a field found a Truth or universal fact the job of the modern educator was to impart to the learner that knowledge in an efficient and effective manner. The measure of this modern educator was thus determined by how efficiently and effectively they imparted the Truth to the learner, in other words on the performativity standard. The authority was granted to the educator with the best performativity standard. Lyotard argues that in the postmodern the performativity is still a source of legitimacy. Although the notion of the educator imparting Truth or universal fact has been debunked and it has been replaced with how well the educator can mold a learner into the pragmatic role in the social system, the performativity standard maintains itself as education's basis for legitimacy and authority, even in the era without Truth. Under the performativity standard educators maintain their ability to intervene in learners' lives and to create certified teachers.

Lyotard, I believe, would join me in arguing that this is not the most advantageous conception of a postmodern approach to education. To begin with performativity is based on the notion that there is a highly stable system: a system that goes about "dehumanizing it [humanity] in order to rehumanize it [humanity] at a different level;"[219] a system that says, "Adapt your aspirations to our ends-or else."[220] Even though the performativity standard allows education multiple truths, it limits them to the ones that allow for an improvement of the output/input ratio and tends to be short sighted. A systems view also tends to consciously overlook the self-engendered paradox or aporia, as Derrida describes it, and the unresolvable issue between components of the system or differends as Lyotard describes them.

The crisis in authority leaves the educator with several burning questions: What truths will a community value, in the absence of Truth? If all truths are partial, how can teachers claim to teach the community's valued truths? On what basis do we as educators intervene into students' lives if the students' knowledge and the educators' knowledge is just a social construction? Furthermore, where can we base a set of criteria that demonstrates that educators' knowledge is superior to the students' knowledge? Where can teachers ground their teaching methods? Finally, on what set of criteria do we judge these

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[219]Lyotard, p. 63
[220]Ibid, p. 64

teaching methods? In conclusion, a postmodern education must either articulate a set of educational approaches that respond to the traditional questions or create a new set of educational questions and articulate approaches to those new questions. In either case they must find replacements that can replace Truth and performativity as the basis of education's authority to intervene into students' lives and create certified teachers, if they can still do so.

3C. Crisis of Subjectivity

The crisis of subjectivity is a crisis that addresses a final educational question: Whom do we educate? It is a necessity that educators create a constituency that can profit from their educational services; otherwise, education, as we have conceptualized it, is impossible. In the past we have had the authority to create an educational subject. The essentialized subjects we have created include: the autonomous rational self of Descartes, the dominated, controlled self of Marxism, and the depraved self of Christianity. The educators' legitimacy was based in the ability to put these subjects in touch with the Truth. As we have come into the modern *episteme*, Foucault argues, man became an object to manipulate; this *episteme* gave the educator a superior subject on which to base even more legitimacy. The postmodern crisis of the subject calls into question any notions of the natural or essential self, revealing these past essentialized

subjects as simply myths that we have used on each other and on our students. In the postmodern era, the question of "Whom do we educate?" becomes most problematic. We cannot ground the "Whom do we educate?" in anything but what has been created by the contingencies of our lives. There is no essentialized self, archetypical student, or natural learner. This crisis in subjectivity also extends into the question already addressed, that of "How do we educate?" In modern educational practices, we base how we educate on who we teach. The behaviorist- and the cognitivist-oriented educator, to name just two of the more recent types, both have distinctive educational practices that are based in large part on, and are largely determined by, a distinctive notion of the subject. Without their respective notions of the subject, their theories would be nonsensical. The crisis of subjectivity destabilizes the educators' notions of the subject and thus destabilizes the legitimacy of their education practices. It becomes difficult for educators to argue for an educational practice if they cannot ground their practice in the knowledge that an educator knows more about the learner than the learner does.

It seems that the postmodern era will or already has wreaked havoc on educational practices. The crises of representation, authority, and subjectivity seem to undermine the five traditional answers to the fundamental questions of education: 1) What do we teach? 2) Why do we educate? 3) How do we educate? 4) Who is the educator? & 5) Whom do we educate? In the next section I

will address possible ways a postmodern education could address the questions and implications of postmodern theory.

CHAPTER IV

ELEMENTS OF A POSTMODERN APPROACH TO EDUCATION

The previous section raises the implications and questions that a postmodern education must address. Approaches to these implications and questions, however, should be formulated in a postmodern fashion that will foreground the realization that an ultimate solution cannot be reached. This section will explore the elements that I feel need to be included in a postmodern approach to education. The categories of the previous section will serve to organize the elements as they address each of the following categories: 1) crisis of representation, 2) crisis of authority, and 3) crisis of subjectivity.

4A. Postmodern Educational Approach to the Crisis of Representation

The crisis of representation or the rejection of the notion that Truth exists and we are able to represent it in our language is a difficult issue to address in a postmodern approach to education. We no longer can teach proposition *XYZ* because it is a part of the Truth by using some universal educational method that is

obviously beneficial to the ignorant student. The following are elements of a postmodern approach to education that could address the questions of What do we teach? Why do we educate? and How do we educate?

Element 1: New Conception of the World

The first element of a postmodern approach to education should address the need to release education from the bondages of the Truth as the basis of our education. I submit that a new conception of the world would be a suitable replacement for Truth, a conception that claims that the world is out there, but that the world is not controlled by the Truth that is out there. This new conception of the world rejects the long-standing assumptions that have been inherited from Plato or Western theologies that attempt to "enlighten" or "reveal through divine intervention" the "natural" connection between the world and the Truth. The distinction that I am making here between the world and truth is one that has been made by Rorty. He explains:

> We need to make a distinction between the claim that the world is out there and the claim that truth is out there. To say that the world is out there, that it is not our creation, is to say, with common sense, that most things in space and time are the effects of causes which do not include human mental states. To say that truth is not out there is simply to say that where there are no sentences there is no truth, that sentences are elements of human languages, and that human languages are human creation.

> Truth cannot be out there - cannot exist independently of the human mind - because sentences cannot so exist, or be out there. The world is out there, but descriptions of the world are not. Only descriptions of the world can be true or false. The world on its own - unaided by the describing activities of human beings - cannot.[221]

In the past educators using "enlightened" or "divine" Truth made the claims that teaching the Truth is teaching the world. The Truth for them is contained in the fundamental, universal principles of the world that can aid students, or anyone, through their lives and obviously should be the basis for any education. However, if you say that truth is not "out there," only the world is out there, then like Rorty you would make the assumption "that there is no such thing as a universal foundation, ground, framework, or structure of knowledge. There is only an agreement, a consensus arrived at for the time being by communities of knowledgeable peers."[222] Rejecting these assumptions separates the world from the constructed truths about the world. The world becomes simply the raw experiences <u>on which</u> knowledge communities use their previously constructed truths or <u>out of which</u> they create new truths in their attempts to make sense of those unexplained experiences.

Why does a postmodern education need to be world-centered? There are two reasons. First is the obvious postmodern reason

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[221]Rorty, p. 5
[222]Bruffee, p. 177

that a world-centered education would be more obviously open[223] to multiple truths about the world. The second would be that a world-centered education would be more open to multiple ways of knowing the world.

First, a world-centered education is more open to multiple truths. Compare the difference in these two educational contexts:

> 1) A teacher brings a student to a marsh that is inhabited by frogs. Over the course of the next 2 weeks the student "studies" frogs.
> 2) A teacher brings a student a textbook on frog anatomy that will be studying for the next two weeks. The student opens it up and, among other things, finds a picture of a frog cut open with labels.

The first teacher is using a world-centered education in which the student could find and/or create many different truths about frogs. The second teacher is using a Truth-centered education where it is common that the student would learn only the abstract codified Truth about the frog's anatomy that is contained within the pages of the book.[224] The point here is not to say that field education is better than book education; nor that field activities are better than teacher-led activities; nor that a student in the first situation will "learn more" than the second. Instead, the point is that because the first teacher is not presenting the Truth about

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[223]Although Derrida would have little trouble dispelling the myth that all education is open to multiple truths, it is less obvious to the majority of educators and students.

[224]This is an overly simplistic scenario; I will explore how both or neither of these educational events could be examples of a world-centered education.

frogs, but rather presenting the worldly experiences of frogs, multiple truths are more likely to be accepted and/or created.[225] For in the second situation, one truth is reified and thus immediately eliminates some truths and marginalizes many others. It is more difficult to do this in the first situation, although not impossible.

Secondly, a world-centered education is open to multiple ways of knowing. Donald Oliver articulates a concept which he calls *presence*. *Presence* is a concept that "suggests that we are aware of a realm of understanding in which our whole body participates before we have interpreted and objectified the world with our native sensibilities."[226] Education based on Truth has missed out on this worldly *presence* because it asserts that the words of Truth fully convey the experience. Instead, if we base our education within the worldly presence, rather than on the presence of someone's truth, we could allow for a whole variety of ways of knowing within our education.

For both of these reasons the world should be separated from the "language games," discourse, texts or truths that current society is using, as Foucault does. However, we should also recognize that how we experience the world is limited, shaped, and

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[225]This is not to say that they will be created, for the discursive practices and the gaze of the student may already be strong enough to suppress this multiplication of truths.

[226]Oliver, Donald, "Grounded Knowing: A Postmodern Perspective on Teaching and Learning," *Educational Leadership*, (Sept., 1990), pp. 64-69.

constructed to a large, although not totally by the *gaze* of those games.

This first element of a postmodern education recognizes the world as an important part of a student's education, a part that the current knowledge community's "truths" cannot totally replace, as it has in enlightened or divine traditions. The world would provide the raw experiences in which students use their inherited vocabularies or in which students have an opportunity to create a "vocabulary" with which they can make sense out of these worldly experiences.

This view of the world mandates that we use the world as the center of our postmodern educational efforts, viewing these constructed truths as surrounding or outside of the world. In the past, the world would simply be a distraction in a student's education in the accumulated Truth. For the lived world is an imperfect, chaotic, and sometimes confusing instance of the underlying "True world" or "Perfect form." Once education shuts out the world, its job simply becomes the task of filling our learners with the appropriate representations of the Truth. The relevant educational questions were reduced to: How efficiently and effectively can we fill our learners with Truth? How can we insure learners' ability to exactly recall the Truths and increase capacity for stored Truth? and How can we instruct them on applications of the Truth?.

An example of this eclipse of the world in the name of efficiency is the work of Frank Dwyer. Dwyer has a long line of research on the development of instruction using media with the human heart as the content. His research involved measuring the effects of realism on instructional achievement. He found that contrary to what one might expect, instructional achievement did not increase with an increase in realism. He found that the realism/achievement graph was a bell curve. At the low realism, there was low achievement; at moderate realism, there was the highest achievement; and at high realism, there was low achievement again. His explanation was that at low realism, the learners could not make out what was being taught and at high realism there where too many distractions and the learner could not pick up important concepts about the heart. Thus, a simple line drawing of a cross-sectional view of the heart at the different stages of operations was superior to a movie showing a real heart.[227] By extension the line drawing would also be superior to seeing a real heart for his instructional objectives. The point is that Dwyer's work directed instructors to remove the learner from realism, that the world is a distraction. What better way to fix the *"gaze,"* than to remove all distractions or variables or complexities that may contradict the *gaze*. Once fixed, we can then let the

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[227]Francis Dwyer, *Enhancing Visualized Instruction* (State College, Penn: Learning Services, 1987).

complexity return and the students' will always see the heart within that particular *gaze*.

In the new era, when we look at the world as "being out there" without the Truth as "being out there," the ability to shut out the distracting world from the student is greatly reduced. The truths that the educator or the expert is teaching are based on nothing outside or above human creation. While I am not suggesting that these constructed truths be completely banished from education, they should not eclipse the world from a student's education. They do have some legitimacy in their longevity, of their positionality within a knowledge community, or their rhetorical claims of a better conception of the world. They will probably be an important part of any education, but once again they should not shut out the students from the world. Students must have the freedom and support that places the world at the center of their education. If the world is lost or disconnected from an individual's education, education becomes simply indoctrination to someone else's truth.

This world-centered education is also not an attempt to say that local truths corrupt the student and the only way to insure that a student finds the Truth is to be connected to the world. This is not an attempt to align a postmodern education with the rationalistic education of Kant, who argues that education simply needs to teach the methods of logic so that students can find their own path to the Truth in the world. This type of education

connects students to the world (the source of all Truth) with the idea that this makes the students much less susceptible to corruption by local bias or political greed. Similarly, the progressive education of Dewey connected students with the world because it was a "vital pedagogical tool" where students could "practice" within the world as an important place for the "test of truth." The world-centered education that I am proposing supports Giroux's assertion that "postmodern educators believe the curriculum can best inspire learning only when school knowledge builds upon the tacit knowledge [of the world] derived from the cultural resources that students already possess."[228]

The world-centered education also does not accept some postmodern theorists who argue that the words are the world, that there is nothing outside of text. The following is the way I will frame world-centered education, in the light of this argument. The modern relationship between the world and the word is that there was the world and it was the truthseeker's duty to abstract the Truth from it and codify it in words. Once that was accomplished the word would be detached from the world on some spiritual or metaphysical plane. Like so:

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[228]Giroux, p. 15

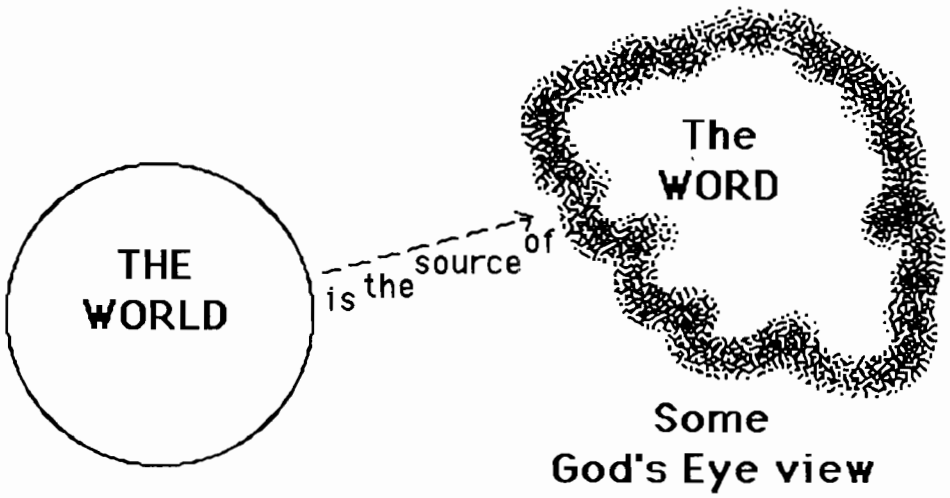

Figure 1. Relationship between the Word and the World in the Modern Era

This was the ideal and most of the time the word would fail to become a part of this plane. This is why Socrates would not write, because he distrusted the word's ability to connect with this plane. You can see clearly that given this, the word can easily replace the world within education. However, in the postmodern world, through the likes of Derrida and Foucault, we no longer treat the word as being detached from the world. In fact Foucault states that his project is not about a particular "object of study" but rather the words that have been spoken about certain objects. I picture this idea in the following way:

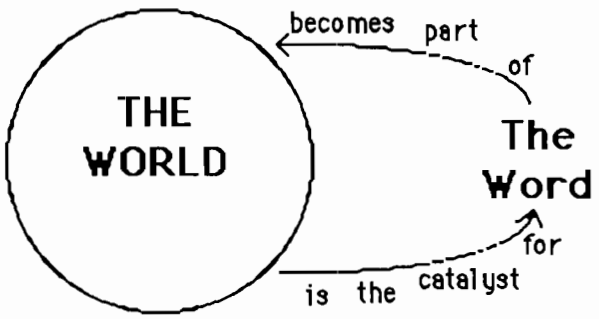

Figure 2. Relationship between the Word and the World in the Postmodern Era

Here you can see that the world is not collapsed into the word; instead the world is the catalyst[229] for the words, which are not connected to Truth. This is not unlike the first diagram, except for where the word ends up, which is back within the world and not on some metaphysical plane. Thus the word becomes part of the world and comprises part of the worldly experiences of a world-centered education. Edward Said supports this notion stating that "[t]exts are irreducibly 'worldly'" and goes on to say that "[t]exts are in and of the world because they lend themselves to strategies of reading whose intent is always part of a struggle for interpretive power."[230]

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[229]I use catalyst here, as opposed to source in the previous diagram, to indicate that there is not True word to some part of the world, but rather it serves as a catalyst to get things going.

[230]Edward Said, *The World, the Text and the Critic* (London: Methuen, 1984) p. 177.

Another argument against this notion that there is nothing but text is that it is limiting in a practical type of endeavor such as education. In the book Postmodern Education, Giroux and Aronowitz cite Cornel West, saying that "the multilevel operations of power within social practices cannot be understood exclusively with reference to language and discourse."[231] Giroux and Aronowitz go on to state that "[l]anguage is not the sole source of meaning; it cannot capture, through a totalizing belief in textuality, the constellation of habits, practices, and social relations."[232] They go on to argue that the notion that there is nothing but text undermines people's ability for resistance to power exerted at these extra-literate experiences. The world is thus comprised of the word and its excesses, as well as a *presence* that is outside the capabilities of the word.

Therefore, this world-centeredness would constantly acknowledge the limited power of any words about the world, once again reinforcing the postmodernist position that rejects the notion of Truth being in the world for anyone to discover. Thus the new educator reveals methods of discovering the Truth as practices that insure the continuing domination of a particular knowledge community, for "[t]he master's tools will never dismantle the

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[231]Henry Giroux & Stanley Aronowitz, *Postmodern Eduction: Politics, Culture, & Social Criticism* (Minneapolis: University of Minnesota Press, 1991), p 78.

[232]Ibid

master's house."[233] A postmodern education must include the possibility for the students both to use the inherited vocabularies of the knowledge communities, while not allowing them to eclipse the world, and to create a personal vocabulary, without making the assumption that the world will lead them or speak to them of Truth. The world-centered education provides the experiences of life that a student must study and, out of which make sense. In the next chapter, there will be a discussion of implementation practices of a world centered education, but now let's turn to a second element of a postmodern education.

Element 2: Representation of Multiple Discourses and Histories

The implication of Foucault's strategy of reversal, the separation of the world from the vocabularies spoken about the world, is at the root of this second element of a postmodern educational approach. This second element is the element of multiplicity. A postmodern educational approach should address the multiplicity that is spawned with the rejection of a single unified Truth or structure of knowledge. The project of representation has long been an attempt to record a single unified Truth which all people can live their lives by and, for education, which all teachers can teach. The possible successful completion or even the partial completion of this project has been rejected by

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[233]Lorde, Audre "The Master's Tools will Never Dismantle the Master's House," in Cherrie Moraga and Gloria Anzaldua (eds.) *This Bridge Called My Back* (New York: Kitchen Table Press, 1981), p.99.

postmodern rumblings that are toppling this myth. Instead, the postmodernists separate the world from the word and as a result replace the one theory, the one discourse, and the one history with the many, celebrating the multiple truths of life. Thus, a postmodern education should replace the Truth with a plurality of incommensurable truths. It is necessary for any postmodern educational approach to address the need and the problems of representing this multiplicity. This representation of multiplicity need not destroy past discourses based on the Truth; it should simply represent them as one of many truths, while at the same time representing previously marginalized discourses in the same arena. The representation of these multiple discourses should also represent the connections with conflicting discourses and the connections with supporting discourses of history. This representation of history and conflict is proposed to have two effects: 1) It will represent to the student that all education is a sort of violence on them, and 2) it will foreground the power-constituting and power-constituted nature of these truths. This effect transpires because the representation of these multiple and conflicting discourses can illuminate the violence, the power, and the history of these truths. This concept demonstrates an attempt to deal with the multiplication of discourses with the recognition that any discourse is a tool that can be used to dominate, while at the same time trying to create a postmodern education that should

facilitate the devastating critique of the violence any discourse does to its "other" and to the "we".

Similarly, this postmodern turn to plurality of truths must also be reflected in the multiplicity of the answers to "How do we teach?" and "Why do we educate?" A postmodern educational approach should also represent the multiplicity of educational methods and the multiplicity of rationales based on pluralistic notions of educational truths. So this pluralism of discourses would be extended to a plurality of educational methods and educational rationales. Within this new view of knowledge representation, all truths, educational methods and rationales, as well as the conflicts between and among them, should be represented and made accessible to the student. These conflicts should be avenues for conflicting discourses to attempt to redescribe the reasons a particular discourse teaches a particular truth and uses particular methods.

How to create such a representation and how the students will interact with it will be discussed later, but first let us turn to the crisis of authority.

4B. Postmodern educational approach to the crisis of authority

The crisis of authority addresses the question: On what basis do we derive authority in the postmodern era where notions of Truth and universal Reason have been rejected and can no longer serve to undergird it? Furthermore, if we reject the

performativity standard, are there any other bases or substitutes for authority in a postmodern education? This section will look at elements of a postmodern approach to education that addresses the crisis of authority, elements that will not rely on Truth or performativity to ground authority when we intervene into students' lives.

Element 3: Student Control

The first element towards a resolution of the authority question should address a need to increase students' control over their learning environment and relax our notions of educational authority. Take away from the educator of the modern *episteme* the object of study that characterizes it, man.[234] By taking away man as an object of manipulation and domination, we could release the student from the discursive hegemony of the teacher who would give him a position that is vastly different from the "learner control" that is in current literature. Linda Brodkey articulates the student's position quite well in saying:

> Discursive hegemony of teachers over students is usually posed and justified in developmental term - as cognitive deficits, emotional or intellectual immaturity, ignorance, and most recently, cultural literacy - any one of which would legitimate asymmetrical

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[234]This is the masculine pronoun used by Foucault, who uses it to symbolize the modern episteme and is not meant to include the female. I will use this pronoun throughout this section.

> relationships between its knowing subjects, teachers, and its unknowing subjects, students.[235]

This is not to say that we can strip out the power relationships from education, for as Foucault argues this is impossible. Rather it is to say that the student should not be forced to be our rat in our maze or the clay we are molding.

Why should the student have more control? and How is this postmodern? are both important questions. Student control should be an element of a postmodern education for several reasons. Educators must face the realization that

1. their truths, methods, and rationales for educating are partial, situational, historically constructed and political;
2. their truths, methods, and rationales serve a particular partial, situated, historically constructed and political knowledge community;
3. students may have their own partial, situational, historically constructed and political set of truths either found within their different knowledge communities or created on their own;
4. intervention of teachers' truths into students' lives necessarily marginalizes and devalues students' truths.

Thus the intervention of the educators' truths are a sort of violence onto the students' truths, which have been developed through the contingencies of their lives. It follows then that a postmodern education cannot ground authority in anything but a

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[235]Brodkey, Linda, *Academic Writing as Social Practice* (Philadelphia: Temple University Press, 1987), p. 139.

violence by a knowledge community. Judging educational authorities of any kind should be a judgement of the lesser of evils: which does the lesser violence to the fewest number, or as Lyotard puts it this judgement should be made through a "politics of the lesser evil."[236] For all attempts to impose any broad-based, general curriculum will necessarily be a violence on that situated, politicized, historically constructing student. One way to minimize this violence is to minimize this type of broad-based, general curriculum. Student control of the instruction and curriculum is one way of doing this. This is not to say the violence can be totally avoided; for in order to talk to one another, we must do violence to the subject we discuss and to each other. One of the goals of a postmodern education is to find the curriculum with the least amount of violence and acknowledge and explore the ways in which that violence is committed. The selection of instruction outside of this general curriculum should at least partially be in the students' control. For if truths are situational, historically constructed, and political who better to have at least part of the control or part of the negotiated control than the situated, constructing student who will be the object of that violence.[237]

Thus, to answer the question previously posed (i.e., How can we intervene into students' lives?) the answer is to a certain

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[236]Fritzman, p. 378

[237]This use of the word "violence" is not the same way that we usually think of it. Foucault, as previously argued, sees all languages a conceptual violence we do to the world and to each other. Violence in this context is incorporating Foucault's usage of the term.

extent we do not. To what extent will not be taken up here, but I would argue that in a postmodern education judgements concerning who, what, when, and if a specific educator should intervene into a situated student's life should at least be partially determined by the student in that situation.[238] Specifically how to do this will be developed later.

Element 4: Representation of Authorities

The fourth element of a postmodern approach to education is the representation of authorities. This element suggests that traditional authorities, after we have given students back some control over their education, should be represented and made available to the student. We should restrict authorities' ability to unilaterally intervene into students' lives and impose their ways of making sense of the world. However, the authorities should not be eliminated, but rather represented as possible educational resources to the students to be judged on their terms. It would be the students' decision to do any number of things with these authorities: they could reestablish the authorities' traditional roles or simply ignore the authorities altogether.[239] In this representation of authority, the authority would never have

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[238]Without being removed from the society. (e.g., The high school dropout has determined not to be intervened upon by school anymore, but is ostracized from society.)

[239]I don't think that this is totally possible to ignore all authorities, because we at least need a common language to have a conversation. However, I would suggest that at least under some negotiated criterion we make this possibility available.

unilateral domain over the student and the student would always have the opportunity to enter into a different authoritative relationship or none at all. Thus, addressing the specific issue of certified teachers, the authority to certify one person to intervene into students' lives for blocks of time[240] will be lost in the postmodern era.

To conclude this section on postmodernism and the crisis of authority, it is important to address a burning issue in most educators' minds who have come to this point in addressing such issues. The issue goes something like this: "If we put the student in control, as you suggest in Element 3, and only 'represent' authorities, as you suggest in Element 4, what is the motivation for a student to study?" This argument might be furthered to include the statement that "Since you do not have a theory of subjectivity that says the student would 'naturally' learn if given the proper attention, resources or role models, how can we as educators live with these two elements of a postmodern education?"

I have three responses to these arguments. First, there will be theories of subjectivity that will inform educational methods of motivation (ie. theories of the learner). The represented authorities will have developed not only truths for the students but also theories of education which will have related theories of the learner; it is just that they will not be forced on them, as they

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[240]Whether it be a 6 hours a day, 5 days a week for 36 weeks in elementary schools, or 1 hour a day, 5 days a week for 36 weeks in secondary schools, or 3 hours a week for 10 or 15 weeks in college.

have been in the past. It will be these authorities' opportunity to argue that their theories will serve the student in the best way. Second, educators forget that learning takes place outside of the institutions that create theories of learners. These exterior institutions will continue to motivate learners (whether they be economic, religious etc.), even when educators give up on the True theory of the learner. Third, as will be argued later, there is a certain place under certain conditions that educators should maintain their traditional role. This place is in the public sphere and will be brought up in the next section.

4C. Postmodern Educational Approach to the Crisis of Subjectivity.

The crisis of subjectivity has been the most difficult to deal with because it is probably the most personal. It involves the self, the person each of us believes we are. Rorty states that socialization "goes all the way down." In the postmodern era, it is difficult when we give up the metaphysics of the world; however, when we give up the metaphysics of the self, it can be personally threatening. As I have been acclimated to postmodern theory, the self has been the most difficult thing for me to give up. It was fairly easy to give up part of myself to socialization, but it was difficult to say contingency is a worthy determiner of who I am: to believe that what I think, feel, live, see, and strive for is totally created from the contingencies of my life.

A postmodern educational system would ideally create subjects who can come to grips with the idea that we are socialized all the way down, subjects who would be at ease with the idea that the contingencies of their lives have created how they see, feel, hear, and how they are aware of everything, including their bodies. Foucault argues that nothing has a sufficient basis for ahistorical understanding, not even our bodies. Thus in a postmodern education, it is important to represent this contingency of the self. It is also vitally important not to impose this contingency of the self on everyone. There would be a problem with this contingent self, because it would require, in a sense, creating another essentialized subject, simply a negation of the essentialized subject. This project is doomed from the beginning, for it does not allow for the plurality and diversity that is so much a part of the postmodern. Once again, such a project creates an "Other," a person who wishes to maintain an essentialized self and not accept contingency as a worthy determiner of themselves. In a postmodern educational approach, there needs to be a space for individuals who wish to think of themselves and to be treated as essentialized subjects; however, in the postmodern we need to severely limit the possibility that an essentialized subject can be used against that subject's "Other." The following elements are attempts to meet these and previously mentioned needs of postmodern education.

Element 5: The Private/Public Split[241]

Using Elliot Eisner's "Five Basic Orientations to the Curriculum"[242] we can divide education into two traditional goals, the development of the student's private needs and the development of the student's public needs.[243] Rorty argues that these two goals for education are unresolvable, that is, you cannot create an education that provides space for education and creation of all ideas or discourses and an education that instills communal knowledge on which to base a community of any size. These two educational needs create an *differend* where no common set of procedures and criteria can be found to resolve this dispute. However, as Lyotard might argue, this is where educators will find their maximum insight into the process of education.

The question is what to do in an educational environment with this *differend*. Rorty suggests splitting the self into two incommensurable subjects, the private self and the public self. For educational purposes, the private side would be the educational endeavors that would encourage the student to develop the private self, whereas the public side would be the educational

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[241]I have purposely switched the public/private to private/public as a first step to deconstruct this binary opposition.

[242]Elliot W. Eisner, *The Educational Imagination, On the Design and Evaluation of School Programs* (New York: Macmillan Publishing Co., 1979).

[243]Eisner's 5 orientations include Development of Cognitive Processes and Personal Relevance which emphasize the private; while the Academic Rationalism and Social Adaption and Social Reconstruction emphasize the public. The fifth orientation is the Curriculum as Technology which probably cannot be categorized as either.

endeavors that would encourage the student to learn the communal ideas of his/her knowledge community and the methods for sharing his/her private ideas with the community as possibly useful ideas in the public sphere. Discussion of how to implement these two different subjects will be taken up individually in the next chapter. First, let us look at where to make this split.

Rorty in his article "The Opening of American Minds," argues that the split should be between the K-12 schools and the "non-vocational higher education" universities. He agrees with E. D. Hirsch that all K-12 education should be about is educating of the public self's ability to understand and use the common knowledge of the culture, not the Truth but what is "held to be true." Then only in non-vocational higher education should students be allowed to edify themselves. It seems that, for Rorty, you have to become one of us, before you can become you. I strongly disagree with splitting education in this manner. It is an elitist position, for only the non-vocational education students will be allowed or at least encouraged to create a private self. Non-vocational education has always been comprised of mostly students who do not have the need for the security that a vocational education provides and who have the money to attend non-vocational education. I think that an argument can be made in at least two different ways. The first one is almost the direct opposite of Rorty's position, that is, K-10 should be primarily for the development of the private self and

the 11-12 and the universities be for the public self. The K-10 should encourage the development of the private self and would not marginalize the experiments of the students in their attempt at creating themselves.[244] By the 10th grade, we would have strong individuals. Then, starting at 11th grade, we would start teaching them about the public sphere. They would learn it because it could easily be demonstrated that without the public sphere most of them would have their private selves crushed by the strongest within their community. In this way you have to develop "you" first, and then allow you to see the need for "us."

Another possible split is that the private/public split should not be made across given age or grade levels, but rather there should be a split throughout grade levels. At each grade level there should be education and constant tension between the developing private/public selves. I see it as an ebb and flow, of creating a ladder and unceremoniously kicking it away, or of erecting a structure, then challenging the student to come up with something better or unique; or having students create structures and examine how it may hurt others in their community.

Later, I will argue for one of these positions, but for now it is important to note that although Rorty's private/public distinction is an important element to a postmodern education, it is not

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[244]Of course there would have to be some of the public sphere in this education but it would be kept to a minimum.

implemented well in Rorty's discussion of the topic as it relates to education.

Element 6: Public Liberalism

Rorty's public liberalism as described earlier is another element of a postmodern education. This element is the one that guides the development of the public self and thus guides the community's core curriculum of a postmodern education. The community curriculum committee should be comprised of liberals who "are the people who think that cruelty is the worst thing we do."[245] Liberalism guides how a postmodern education should address the needs of any group of people, while not allowing cruelty, or at least minimizing it. It is not the purpose of this section to argue how to create a liberal core curriculum, but rather to frame the issue. These methods of liberal education should be negotiated with the community and should not be considered a gift the community gives our students, but rather as a sort of violence that we do to them that is wrought with power, injustice, and conflict. Thus, the judgement should not be on some ahistoric standards but rather based on "the politics of the lesser evil" that we will do to our students.

Element 7: Represented Irony

Where liberal theory guides the public self, ironist theory guides the private self. Rorty would like all private selves to be

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[245]Rorty, p. xv

ironists, that is, to have recurring doubts about their final vocabularies. In a postmodern education, I would like to modify Rorty's position by using ironist theory as more of an architectural feature than a theory to be made commonsensical to the student. This architectural feature should represent to the students their position within a centerless web of contingencies, vocabularies, histories, and discourses that are intersecting to form what they know as their self. This represented irony would redefine the students' "curriculum not as a warehouse of knowledge merely to be passed on to waiting consumers, but as a configuration of knowledge, social relations, and values that represents an introduction to and legitimation of a particular form of textual authority."[246] A postmodern education should not be in the business of creating private ironists; however, students should have the irony of their private selves represented to them. This representation of the students' ironic position should be such that even when they are essential or grounding their position in something outside of themselves, they must face the overt representation of their ironist position.

This feature would make any attempt at reifying a structure of a particular self a willful setting aside or ignoring of inconsistencies and paradoxes of that structure. The students would also be put in a situation where their ability to impose on others the vocabulary developed by their private self is restricted.

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[246]Giroux, p. 103

This is not to say that the students would not be able to talk to other students or try to persuade other students of their point of view. They are just not allowed to say, "This is my private self and everyone else should model themselves after me and use my vocabulary." Thus, in these two ways the private self, while not forced to be an ironist, is constantly reminded of that position by the representation of their ironic position by represented discourses of others and their inability to unilaterally impose their created self onto others.

Element 8: Space for Self Creation

The eighth element of a postmodern education is the providing of space for self creation. This space is where "students attempt to make themselves present and to define themselves as active authors of their own world."[247] A postmodern education should not impose the goal of self creation, but make it possible for the student to ask the question: "What sort of person do I want to become? with a drama about how I became the individual I am now, I remind myself of my power, partly muscular, partly linguistic, to forge my own life by experimenting with it."[248] It should be possible for the student to engage in self-creation and also to leave their history to determine who they are; however, neither should be the goal of education. Self-creation or edification

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[247]Roger Simon, "Empowerment as a Pedagogy of Possibility," *Language Arts*, vol. 64, no. 3, (1987), p. 377.

[248]Rene V. Arcilla, "Edification, Conversation, and Narrative: Rortyan Motifs for Philosophy for Education," *Education Theory*, vol. 40, no. 1.

is different from the self-mastery of enlightened or divine education. Self-mastery is the mastery of the rational self or the Christian ideal self over the base, animal, or instinctual self. It is the triumph of a higher self that is somewhere deep inside of us but buried by the impulses and raw emotions of the primitive self. Self-creation is not an attempt at getting at a true self buried deep within ourselves. Rather it is the acknowledgement and the appropriation of the historical contingencies of the self; the critical examination of the contingencies and vocabularies that have created the self. It is using the *differance* between how you have been written in the past and the what you have become, the poetic experimentation with new ways of being. It is conducting, as Foucault suggests, a critical ontology of ourselves through a limit-attitude. Finally, it is attempting to create a new archeology of oneself or to put it another way the conditions for what we "think, say, and do." This is not to say that self-creation is an individual creating a single unified self, but a "test of the limits that we may go beyond, and thus work carried out by ourselves upon ourselves as free beings."[249] In the postmodern, any unifying theory, even in the private sphere of self-creation is most problematic.

To clarify, the way in which I would like to invoke the concept does not call for total individualism, the way Rorty wants to, where the cultural hero is the strong poet whose ultimate goal is attempting autonomy. This element of a postmodern education

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[249]Foucault, "What Is Enlightenment", p. 47

calls for the space for self-creation; it does not call for the goal of education to be self-creation. The difference is that a student will also have the space to create a connected, communal self that may reject any goal of autonomy in relationships.

The goal of these elements of a postmodern approach to education that have addressed the crisis of subjectivity are new ways in which to conceive the subject in the postmodern era. The way that I have approached this crisis is that I have articulated a student that is confronted by the irony of her subject, has the space to create a new subject, and has the space to improve on the subject that she discovers she has. She has access to the resources to possibly find other subjects that she might find useful and is not allowed to let her efforts do harm to other students, who can do the same. In short, the postmodern student subject is one who is forced into an ironic situation, is impotent to impose her vocabulary on other students, and is encouraged to examine, find, and/or create the standards by which she lives her life.

Summary

With these 8 elements of a postmodern education identified we can now begin to imagine what a postmodern education would look like in the context of students and educators. To review, the new conception of the world, which foregrounds the *differend* between the world and the word, gives us something on which to base education in the absence of Truths. The representations of

multiple discourses and histories give the student access to the many "fields of knowing" that we have used on the world. Student control recognizes that, as educators lose the grounding of their authority, the student's experience should become more of a controlling force in educational decisions. Representation of authorities decenters traditional educational authorities to a peripheral place where they can be used by the student under his/her conditions. The private/public split attempts to begin to establish where educators should impose a certain discourse and where to leave the students to their own creative efforts. Represented irony and public liberalism establish the ground rules for the private/public split, respectively. Finally, the establishing of a space for self creation allows the student's private self the support and opportunity to explore the person that they what to become. These eight elements of a postmodern education are submitted tentatively and speculatively with the hope that they can inform the upcoming attempt to think of postmodern educational practices that would form the bases of a postmodern education.

CHAPTER V

CREATION OF A SPECULATIVE POSTMODERN EDUCATION

After examining some of the implications of postmodern theory for education and from that deriving eight elements of a postmodern education, this section will pose the questions: What would such an education look like? What would be maintained? What would change? I have tried several different ways of explaining my vision of a postmodern approach to education, keeping in mind that there can be no definitive answer in the postmodern era. The way I found to be most illustrative is to create a science fiction scenario[250] incorporating the elements of a postmodern education as identified. Using the image that is created, I will speculate on how this educational fiction could be turned into educational practices.

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[250]I am indebted to Drs. William Taylor and John Belland for the idea of thinking and talking about education via a science fiction scenario; their scenario "Kelly's Education," has been a vital resource. William Taylor and John Belland, "Kelly's Education," in Denis Hlynka and John Belland, (eds.) *Paradigms Regained: The Uses of Illuminative, Semiotic and Post-Modern Criticism as Modes of Inquiry in Educational Technology* (New Jersey: Educational Technology Publications, 1991).

The following is a scenario that illustrates the type of post-modern education that I envision:

> Imagine a student who has a number of expert educators looking over her shoulder and watching her at all times. Each of these educators has conceived of the world, her as a student, and education in many differing ways. They also differ widely on the methods of how to deliver their education to the student. They are, however, silent and unobtrusive. They and their knowledge communities have accumulated a store of codified knowledge, references, delivery methods, spokespeople, and media presentations that relate to their conceptions of the world and their philosophy of what is relevant to the student. They continue to be silent and do not interrupt the student in her activities, until the student looks to them for assistance or guidance. This assistance is totally initiated by the student. At her request, they provide her with the previously identified codified information, instruction, concepts, illustrations, etc., that they hypothesize she needs to develop or that she specifically requests, based on their philosophy and their observations of her activities. These experts do not have a discussion with her; they simply direct her to the predetermined resources of that knowledge community. They do however make available to her contacts with other members of their knowledge community or other students working on similar problems. The student can access any one of the experts available to her at any time. She can work with one expert as long as she wishes and at any time she can stop the expert and continue with her own activities. Furthermore, she can look to a second or a third expert for insight while working within the discourse of the first. These second and third experts can provide her with commentary on the actions of the first. Her education, for the most part, is the complex

> interweaving of her own attempts to make sense of the world, her interacting with the experts' recommended resources, and the requests for commentaries of one expert on another. The exact mixture of these two components is up to her. Rarely is she overtly directed to attend to certain information or instruction. This information that is directed to her is mostly information she finds very useful in her dealings with other people and can be attended to at her leisure. At times it is a nuisance but seldom detracts from her enjoyment of education.

This scenario, while not intended to be anything more than fiction, can be used in our discussions of a postmodern education, raising some interesting prospects to think about and explore.

CHAPTER VI

CREATING A POSTMODERN EDUCATION

As a first step in probing the educational implications of the highly abstract theoretical language of the first half of this dissertation is to attempt to articulate and discuss the different educational constructs, practices, and metaphors that would be a part of an approach to postmodern education that can be taken into the "classroom."

6A. World-Centered Education

The first aspect of this proposed postmodern education is that it must be world-centered. That is, the truths that knowledge communities have developed need to be displaced as the center of the educational endeavor. The students must first have access to the experiential world[251], as previously defined, as the basis of their education. This opens the students education to multiple

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[251]There are exceptions to this world-centered education. The most obvious is those parts of the world that are of extreme physical danger to the student. Educating students on broken bones should not have to be experienced.

ways of knowing and multiple truths that a grounding in these worldly experiences more openly promotes.

What is and what is not the world? Simply stated the world is everything. It is the phenomenal world that we experience throughout our lifetimes. For explanatory reasons, I will discuss the world in two parts in this context: 1) the physical world and 2) the cultural world. The physical world is the world that we would call natural, which would include the parts of the world that we have objectified, like frogs, mountains, space, sand, sun, light, people, rain, etc. The cultural world is what we would call artificial or human-created; these would include the parts of the world that we have directly created, like chairs, books, the English language, the Declaration of Independence, or this document, to name a few. Also within this category there are the human created signifiers that we assign to things in both categories, such as the words "frogs," "sand," "chairs," or "textbooks." These words are a part of the world, but only a part, and obviously play an important educational role. They should not, however, eclipse the entire world in the educational setting, and there need not be any implication of a strong connection between them and the world.

Derrida and Foucault demonstrate this idea of the study of words that is apart from any implied connection to the world. In the proposed scenario, the actions of the educators do not interrupt the students' lives because the postmodern educational approach provides for a world-centered education. The students' self-

directed study of the world should be the central and honored activity of a postmodern education. This notion should not be thought of in the narrow sense. Examples of this self-directed study could include the playing or experimenting with stones, blocks, snow or a magazine. This study should be honored even if students are floundering, on wild goose chases, being inefficient, or wasting time. For all these judgements are derived from specific educators with specific educational objectives and specific views of the student. The power of the educator to intervene in the students' lives is reduced in the postmodern; the world-centered education is one way of accomplishing this goal.

6B. Student Empowerment

The second aspect of the practices of a postmodern education would be under the umbrella of student empowerment. The radical term of empowerment was introduced to education through the work of Paulo Freire. For Freire empowerment happened through a process he calls "conscientizacao." Conscientizacao is where people become subjects, who know and act; instead of objects, who are known and acted upon.[252] There has been much controversy and discussion over the term "empowerment" which has been de-radicalized in the educational literature. Empowerment for some educators would be the process of getting

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[252]Paulo Freire, *Pedagogy of the Oppressed* (New York: Herder & Herder, 1971).

the learners in touch with the Truth, through imparting the Truth to them or teaching them the proper methods of getting in touch with the Truth themselves. These educators would proclaim, "Why of course the Truth is empowering for 'the Truth shall set you free.'" Ellsworth denounces this type of empowerment as being fundamentally flawed with "rationalist assumptions" which are undergirded by myths of the "ideal rational person" who can use "a series of rules of thought" to arrive at "universally valid propositions."[253] In these types of rationalistic empowerment, empowerment is something that is done to the student. This is unacceptable in a postmodern frame and is not the way I wish to use empowerment. The type of education for empowerment that I wish to use views such notions of the Truth as sources of enslavement, resonating to Nelson Mandella's statement, "Freedom before education." For if there are only truths that knowledge communities construct and there is no Truth, then when anyone invokes Truth as the basis of education, they are attempting to impose their "truth" onto everyone else. Then the attempts to teach students the Truth only enslave them to someone else's truth.

Postmodern empowerment, being the opposite of this type of enslavement, is where the student can explore, describe, and interrupt the genealogy of the classroom. Empowerment of this

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[253]Elizabeth Ellsworth, "Why Doesn't This Feel Empowering? Working Through the Repressive Myths of Critical Pedagogy," *Harvard Educational Review*, vol. 59 No. 3, p. 304.

type, which preserves the radicalness of its origin, is exemplified by the work of feminist and critical pedagogy.

> It enables us . . . to ask under what conditions and through what means we "come to know." How one teaches is therefore of central interest but, through the prism of pedagogy, it becomes inseparable from what is being taught and, crucially, how one learns . . . What pedagogy addresses is the process of production and exchange in this cycle, the transformation of consciousness that takes place in the interaction of three agencies - the teacher, the learner, and the knowledge they produce together.[254]

First, however, I find useful Ellsworth's efforts at problematizing empowerment, even in critical pedagogy, as a series of "repressive myths that perpetuate relations of domination."[255] Ellsworth categorizes many efforts at empowerment as something authority figures "do" to the disempowered masses:

> Yet theorists of critical pedagogy have failed to launch any meaningful analysis of or program for reformulating the institutionalized power imbalances between themselves and their students, or of the essentially paternalistic project of education itself.[256]

She categorizes these efforts into three strategies: 1) empowerment as giving students analytical skills to work through the plurality of truths; 2) empowerment as a student/teacher partnership that learns/relearns an object of study; and 3)

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[254]David Lusted, "Introduction: Why Pedagogy," *Screen*, vol. 27, no. 5, pp. 2-14.

[255]Ellsworth, p. 298

[256]Ibid

empowerment as inevitably authoritarian, but something which must be judged on its aims and on the respect it has for the student.[257] The first strategy is problematized as a part of the group founded on "rationalistic assumptions." The second is problematized on the "implied superiority" of the teacher that goes untheorized. Finally the last strategy is problematized on the vague, often "ahistorical and depoliticized abstraction" of the basis of such judgements.[258]

The following are empowering practices that I have theorized may fit well into this vision of a postmodern education, while heeding the insights of Ellsworth by maintaining a problematic view of empowerment.

The Return of Study

Instruction and study have been conceived of in many different ways. In an interesting paper, Johnsen and Taylor[259] make a distinction between them that will be useful in the discussion of the attempt to make a postmodern education an empowering education. Johnsen and Taylor state, "Instruction assumes: I, as the teacher, have the critical knowledge you need and I will give it to you. Instruction means, therefore, that through its directing power, students would converge upon the

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[257]Ibid

[258]Ibid, pp. 306-7

[259]Jane B. Johnsen and William D. Taylor, "At Cross-Purpose: Instructional Technology and the Erosion of Personal Responsibility" presented at the Annual Meeting of the American Educational Research Association. (April 1988) These next two sections were inspired by this work.

teacher's truth."[260] Study on the other hand was the "process of self formation - - a personal transformation process. One studied, one remade himself or herself for the glory of God."[261] Prior to instruction, the teacher encouraged study and "no one dreamt that a student could be instructed into . . . self-formation." Johnsen and Taylor trace the origin of instruction to Johann Comenius in the mid 1600's. They follow the concept of instruction throughout its history and find its culmination in the 1950's with Tyler's technical rationality and Skinner's behaviorism. This laid the groundwork for the conception of the "science of learning and a technology of instruction" that is prominent today. So powerful is this force that instruction has largely eclipsed study from the realm of education. Instruction enables educators to create a product of education, which can be held accountable, reproduced reliably, and thus is a powerful mechanism to acquire public resources. That product is a learner. After documenting instruction's tendency to "deadened self-confident curiosity"[262] and the erosion of personal responsibility for education, Johnsen and Taylor end the paper by saying in the era of instruction, "How could they (students) think otherwise?"[263]

In the postmodern education, study should be brought back into education. However, it should not reverse the binary

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[260]Ibid, p. 3
[261]Ibid, p. 3
[262]Ivan Illich, *Towards a History of Needs* (New York: Bantam Book, 1977). Quoted by Johnsen and Taylor, p. 3.
[263]Johnsen and Taylor, p. 5

relationship by once again becoming valorized with respect to instruction; but rather study should return to education, thus returning the responsibility of education to the student.

Powerful Student vs Weak Learner

With this return of study to postmodern education, there is a corresponding return of the "student." The student is contrasted with a learner. A student studies, whereas a learner is instructed and learns. A student is the client in postmodern education, whereas the learner was the client of traditional and modern educations. The student comes to education with the goal of self formation; the learner comes to education with the goal of obtaining the master's "knowledge base." The student is the strong poet of the self where education is the place conducive to edification and self-creation. The postmodern education needs to redefine its constituency as students, not learners. This is not to say that students may not take the role of learners, but they must be put into the position of powerful students who may opt for the role of the learner rather than being forced into that role. Thus this postmodern educational vision creates the space for the students' self creation.

Self-Submission to Authorities

This new role of our client as a powerful student instead of a weak learner, again, is not to say that the student cannot be in the role of the learner. It is to say that the student should not be

placed in the role of the weak learner. Learning through instruction can and probably would be useful in some instances and in certain contexts. One example might be when the student does not have the time to study a part of the world and instead wants to be told an expert's "truth" about the world. Specifically, if I am going to France and I do not know French, I may wish to be instructed, or take the role of a learner, on the basics of French, so that when I arrive I will know how to get around, ask "Where is the hotel?" or state "I would like bacon and eggs." However, I should be allowed to study the situation and figure out how to say those things in French. In doing so I may understand French in a much deeper way; however, it may be impractical for me to do so because I cannot spend the time. In this case I, as a powerful student, could self-submit to the role of the weak learner.[264] However, instruction is available to meet my intention, my goals, and the duration that I have specified.

Space for Student Criticism and Reflection

The empowered students also need an avenue for the criticism of authorities within their education, whether those authorities are instructional designers, authors, scientists, prophets, or teachers. This space for student criticism would be a space for the students' "voices" as described in the critical pedagogy literature. There

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[264]This example was modified from line of arguement in Robert Hienich, "The Use of Computers in Education: A Response to Streibel," *Educational Communication and Technology*, vol. 36, no. 3, (Fall 1988).

should be no position within a postmodern education that can be outside of criticism. Furthermore, a postmodern education must provide a meaningful representational space for this criticism that is not limited to peripheral "gossip." This space will destabilize the power structures that are to a large part untouchable in modern educational power configurations. The computer offers an interesting vehicle for such a space[265] and will be more deeply explored in chapter 7.

This space should also provide for room for self reflection or, as Foucault calls it, the limit-attitude that is so much a part of the postmodern. It should be a space, as Foucault suggests, where students conduct "a historical investigation into the events that have led us to constitute ourselves and to recognize ourselves as subjects of what were are doing, thinking, and saying."[266] This space is where a student can conduct "a historico-practical test of the limits that we may go beyond, and thus as work carried out by ourselves upon ourselves as free beings."[267]

But once again this is a space for students to conduct criticism and self-reflection and is not an instructional, curricular, or pedagogical mandate that all students must conduct these activities. This is simply the appropriate significant space to conduct these activities if they so desire.

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[265]This is not to imply that other methods are not available or should not be developed to provide this space.

[266]Foucault, "What Is Enlightenment", p. 46

[267]Ibid p. 47

Limits to the Empowered Student

The idea of the empowered student is primarily a postmodern educational response to needs of the private self. The limits of the empowered student must also be examined in this context. These limits are derived through the need to create the public self. The powerful student must be restricted into the role of a learner for some yet-to-be-defined public goals. The students must be instructed on the practices that they and their society have developed to keep cruelty from happening or in other words, to think, on a certain level, commonsensically that they are liberals. Among these public goals it should be taught that these practices, instructional methods and the public goals themselves are maintained within a framework of the politics of the lesser evil in order to maintain each of our abilities to have a private self. In certain respects, this public self is empowered with the third strategy of empowerment Ellsworth lays out, that of authoritarian empowerment. Authoritarian empowerment is where under certain circumstances acceptable imbalances of power can be used. Ellsworth articulates that "[a]cceptable imbalances are those in which authority serves 'common human interests by sharing information, promoting open and informed discussion and maintaining itself only through the respect and trust of those who grant the authority'"[268] This type of authoritarian empowerment

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[268]Nicholas C. Burbles, "A Theory of Power in Education," *Educational Theory,* vol. 36, (Spring, 1986). Quoted by Ellsworth, p. 307.

seems to fit the need of the education of the public self. A good example is the instruction on basic traffic laws. The public self must be instructed on the basis of the "rules of the road" so that no cruelty should be done to other individuals (i.e., from the loss of lives to the loss of time). This creation of the public liberal self should be the only time, within the postmodern education, where the methods and the authority of modern education would be relatively unchanged. These practices of student empowerment begin to partially fulfill the postmodern education elements of a new conception of the world, student control, representation of authorities, public liberalism and a space for self creation. Although not completely fulfilling those elements, they begin to form the workable framework to use in a postmodern education.

6C. Pluralistic base of Codified Knowledge and Instruction

In the postmodern, the plurality and partiality of knowledge has replaced the myth of the single unified universal Truth. As such, the postmodern educational scenario has made responses to this new pluralization and partialization of knowledge. It has done this by attempting to make all that can inform or instruct the student available. Instead of the knowledge base, we are left with a pluralistic base of codified knowledges. Objects of study have a history; beyond that, they are subject to a number of different vocabularies, each having their own claims to knowledge and truth. As the student begins to study the world, there will be

many different discourses that have made knowledge claims related to that object of study and should be accessible to the student. To make the discourses available to the student, representatives of the discourse would collect their codified knowledge and their instruction to deliver that knowledge and insert them into a huge information-base organized around the different objects of study. This information-base's purpose would be to present information to the student "not to choose among, but walk between" and "abandon the house-of-knowledge metaphor and walk out into the field of knowing."[269] Ideally, this information-base would comprise a collection of as many authors of knowledge as possible. The medium, format, presentation theories, etc. of each discourse would be left up to the representatives of that discourse. The resource base would provide the space for each individual discourse's author or authors to write and present their "story" of all facets of the world in the terms that they think are important to a student studying the world. These discourses would probably be developed separately by different authors, for there would be no systematic model that all of these discourses would fit. Once the discourse is entered into the resource base it enters into the public forum and must be open for the public exploration, integration, consumption, and refutation by other discourses. The resource base would support a sort of

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[269]Tim McCracken, "Between Language and Silence: Postpedagogy's Middle Way: Part I The Text." ERIC document (May 16, 1989) pp. 13 & 18.

chaotic environment of pluralistic resource bases that have been developed from many different origins.

Ideally these discourses would be immediately accessible to students while they study a particular object of study. While the students are working with an object of study, at some point, they could turn to the plural resource base. The point at which the student turns to the base and the reason for turning is at the student's discretion. The resource base would simply make accessible each discourse and its relevant predetermined information. The information-base manager would serve as a sort of pointer that guides the student to relevant information, IF the student wishes to look at it. The goal of this information-base is 1) to provide the student with access to the useful artifacts of the past, but not to impose them; 2) to represent the destabilization and irony of any one discourse's claims of representing the world; 3) to give the student the freedom to look and opportunity to learn these truths with the understanding of their much weaker claims to students' attention; and 4) to provide possible handles or historical tools that one can use to work with the world. In the words of Herbert Kliebard, such efforts represent "the terrain of struggle among different groups over questions regarding the purpose of schooling, how children learn, whose knowledge was to be legitimated, and what social relationships would prevail."[270]

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[270]Kliebard, Herbert M., *The Struggle for the American Curriculum 1893-1958* (New York: Routledge & Kegan Paul, 1986).

Students can use the information-base in many ways, depending on the student. They can use it to see how others have dealt with the object of study, for suggestions on how to deal with the object of study, in seeking an advanced organizer for the object of study, or to add depth or breadth to their own, personal discourse. By presenting these discourses and tools of history, this educational environment avoids the arguments that the student should not "re-invent the wheel." In this environment students do not have to do so; however, they can, if they so desire. Thus, this educational environment would allow for the student to choose a role to play in the educational process. A student wishing to totally create the private self can largely ignore the multi-centered resource base; or, on the other extreme, a student can use the prescription of one discourse within the information-base and learn that tradition, full of aspirations to become a technician or truth seeker of that tradition. The key part of this environment is: 1) the access to different objects of study and different traditions surrounding those objects, and 2) the students' freedom to create themselves by their own means.

Levels of Pluralism

There are at least three levels of pluralism that should be represented in a postmodern education. They are the message, the

method and the medium.[271] These three levels of pluralism are once again attributed to the loss of Truth at each level and the failure of the educational scientist to find the True educational method and medium to deliver the scientist's Truth. I have discussed the matter of pluralistic messages from different knowledge communities in the postmodern era. This section will address the postmodern need for plural methods and media.

As argued earlier any Truth on which we would base the authority to use one educational method or medium is lost in the postmodern era. Without the universal we are left with the many, in this case the many educational methods and media. The methods could include any number of educational methods used in the past. These could include Platonic dialogs, lectures, seminars, drills, exploratories, guided discoveries, lab work, inquiry teaching, tutorials, simulations, behavioral methods, cognitive methods etc. The media may also be any number of things: books, chalkboards, letters, people, audio media, video media, statues, etc.

The selection and the creation of these plural educational methods and media are under the discretion of the knowledge community representatives. Some may only use one educational method with one medium in their presentation of their particular discourse or message. Others may incorporate many different educational methods and media in their presentation of their

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[271] You may recognize these three level as the basic components of the early communications models. This was not originally intended but was an interesting occurrence.

particular discourse or message. These levels of pluralism in education may seem almost ridiculous in the context of, let's say, a mathematics classroom involving the very traditional subject of fractions and ratio. However, there has been some innovative work done by Suzanne Damarin in this practical everyday situation using feminist theory. Her work examines the "problem of women and mathematics, suggests that feminist theorist may be able to engage in a deep level analysis of 'fractions' that could result in 'alternative mathematics' or at least 'alternative interpretations of mathematics'."[272] This work suggests that even in the seemingly "pure" field of mathematics, pluralism could abound, if we only look for it.

Thus this collection or collage will represent many different methods and media as well as messages, answering the need McCracken identifies when he states that "we need multiple modes of communication for multiple ways of knowing."[273]

Computer as Metaphor Collector

This section looks at some of the possible functions of the computer as a practical device that could make possible this idea of a plural resource base. The computer is not a sufficient, or even a necessary facilitator of creating this educational environment. Perhaps in the best possible world, a postmodern education would

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[272]Suzanne K. Damarin, "Gender and the Learning of Fractions" a paper presented to the annual conference of the American Educational Research Association, Boston, MA. (April, 1990).

[273]McCracken, p. 20

not include any computers[274], for their use is a compromise. This compromise has been noted by C. A. Bowers, among others, who proposes that technology is not the neutral "tool" as our current culture sees it; rather, it is a mechanism that selects and amplifies certain aspects of a particular culture perspective. Bowers submits that educational computing supports the current dominant Cartesian cultural perspective through the valorization of literacy over orality, amplification of the myth of individualism, and reification of a technocratic view of time.[275] However, on the practical level of the classroom, the computer is probably a necessary part of this resource base. Because of time, space, and cost constraints, we simply cannot provide access to the number of teachers or experts needed to be able to present these many different and divergent discourses. Even with the computer, it is impossible to include all resources that could inform the student. However, the computer has the capability to act as a huge storage device and manager for the discourses' and histories' codified knowledge and related instruction. Jameson calls this capability "metabooks which cannibalize other books, metatexts which collate

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[274]This may ignore the arguments that computers are one of the forces pushing us into postmodernism. See Lyotard and Poster.

[275]C. A. Bowers *The Cultural Dimensions of Educational Computing: Understanding the Non-Neutrality of Technology* (New York: Teachers' College Press, 1988). Although I find Bowers work insightful and important, he has limited his investigation to current educational computing rhetoric. I will attempt to cast a different light on the possibility of computers in education in chapter 7.

bits of other texts."[276] Furthermore, on a human level, it would also be dehumanizing and disempowering for the experts to be at the beacon call of the student. For all of these experts would have to be on constant vigil and within close proximity of the student to render these types of services. I believe most all experts would find this role in live unappealing.

The computer is an ideal medium for resource storage in this postmodern scenario because it possesses three important facilities: diversity, capacity, and accessibility. The computer has the facility of being able to store and present a wide and diverse range of other media (i.e., text, graphics, music, photographs, video, and animation) fairly well. This facility is vital because of the diversity inherit in pluralism. For pluralism would be severely compromised if all discourses were presented in the same form on the same medium. Advances in computer technology are constantly increasing the range of forms and media type that can be incorporated (i.e., holography, braille boards, talking hands, etc).

The second facility is a large capacity which is also important in a pluralist resource base. The collection of a knowledge base under a single ideal creates a huge amount of information. Pluralizing knowledge multiplies this amount many times over. Storing a pluralistic codified knowledge base is impossible without

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[276]Fredric Jameson, "Reading Without Interpretation: Postmodernism and the Video-Text," in Nigel Fabb, (et. al.), (eds.) *The Linguistics of Writing: Arguments Between Language and Literature*. (New York: Methuen, 1987), p. 223.

the computer's ever increasing capacity to store huge amounts of information.

The final facility that the computer possesses is accessibility to this large and diverse data base. Via the computer, the students can have relatively instantaneous retrieval of information that they are interested in, when they are interested in it. This would somewhat eliminate the necessity[277] to spend the time and effort in finding resources in libraries or museums and traveling to concert halls to experience the knowledge these institutions once totally controlled.

Given these three facilities, a computerized resource base could support the formats of electronic books, newspaper, magazines, video, high resolution graphics, pictures, audio, and any other medium that a computer can handle. Any method can be used, whether it is a simple text presentation (like a book or newspaper), a tutorial (where information is presented, then tested for understanding), a commercial (visual and persuasive), a documentary, a sitcom (entertaining), a speech, a drill (where information is repeated and checked), or a game. Computers could support a range of values, truth statements and notions of reality and could include those derived from positive science, historical analysis, phenomenology, or theology. Likewise, the view of the student and the educational process could be taken from

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[277]While not eliminating the possibility of spending time with these institutions.

behaviorist, cognitivist, or situated learning to name only a few. All of these decisions are up to the knowledge community representatives. The individual resource base of each of these discourses could incorporate any or all of these formats, views, and information types. They would be combined into a huge pluralistic resource base that the students would have access to during the process of their education. While this section has set the stage for the use of computers in a postmodern education, the next section will explore the computer as the postmodern medium.

6D Instruction in a Postmodern Education

Should instruction be a part of a postmodern education? I believe it still should exist in a postmodern education; however, it should exist in a much different context than it has in the modern era characterized by the Tyler rationale. Instruction should be pushed to the side or margins of the educational endeavor. This will be done by first reconceiving instruction as an interruption, imposition, resource, and a political act. I will then pose the construct, object of study, as the best device for attempting to use instruction in the postmodern era.

Instruction as a Resource, Interruption, Imposition, and a Political Act

As the student retakes a position in education from the learner, and study deposes instruction, instruction is recast in a different light. Instruction is taken out of the center of a student's

study and put into the margins. For the discourse representative, taking the instruction out of the center of a student's education creates very little change in the business of instruction. Instruction is still the delivery of some predetermined set of truth defined by some knowledge community. However, instruction has lost its authority to put instruction at the center of education and has turned it into helpful interruptions of student study of the world. Knowledge communities can create instruction, but now they must see it as a useful, helpful, and "instructive" resource.[278] As a resource, instruction is framed more as an interruption in the study, albeit a possibly useful interruption. These instructional interruptions of the pluralistic resource base surround the students' activities of studying the world, always available, but always at the periphery. In this context, instruction is under the students' control and they judge whether the instruction is interesting or useful in their attempts to make sense out of the world and in the creation of themselves.

Viewing instruction as an interruption also should foreground instruction as an imposition, a political act and, as such, a sort of violence that will be done to the student.[279] Furthermore, instruction should also be seen as a political act. First, it could be

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[278]The concept of using instruction as a resource was first revealed to me in a presentation by Michael Striebel "Instructional Design and Situation Cognition: Is a Marriage Possible?" a paper presented at the Annual Meeting of the American Educational Research Association, (April 1989).

[279]This is not to imply that the instruction is flawed over other instruction. It is to recognize that it is impossible to be non-impositional because all communications is impositional. Language is an imposition.

politicized or de-naturalized by renaming the objectives of instruction. The politicized name for objectives might be directives. The instructional function would be basically the same; however, they would be revealed as "truths" or directives of a particular knowledge community rather than naturalized as Truth or as objectives outside of ourselves. Another way to reveal the political aspect of instruction is to connect the instruction to criticisms of students past or present. People or instructors with alternative orientations could enter into the instruction and could articulate the political nature of the instruction.

The object of study

The question of "How do our students organize their education?" is important. Up to this point, the education that I have described could be little more than silent individual study of the world or the imposition of instruction by a knowledge community. A postmodern education must create practices that allow more than this either/or dichotomy. It must find a way to allow for group education in its many possible forms, because the world is an entity that is impossible to study in its totality in any time frame smaller than a lifetime. One way in which the world can be looked at in a shorter time frame or in non-individualistic ways is to use the historically objectified notions of the world as starting points for study. I would like to think of **objects of study,** those parts of the world that our histories have attempted

to point out or objectify, as worthy of study as they serve as a starting point for our study of the world. The objects of study are manageable gateways or starting points to begin to look at the world. They are not the true and natural starting points, they are simply historical starting points that are convenient and as good as any other as we attempt to make sense out of our world. Their purpose is to provide us with manageable access to the world, within the context of attempts to minimize imposition in education. Imagine if you were a teacher and you announced, "Today students we are going to study the entire world." This is an impossible task. However if you were to start with, "Today we are going to start with 'peace' as a starting point to look at the world." It would still be difficult but much more manageable. It is a point of reference that members of a group which is studying or has studied the same part of the world can use to talk to and help each other.

We do need to recognize that objects of study are bounded within these historical discourses, corresponding contexts, and contingencies of their invention. The object we call "trees," for example, is dependent on our predecessors objectifying trees as an important part of the world to study. It carries with it the values of looking at trees and nature with certain light and values. As such they impose a certain amount of their historical contingencies on the students' study of the world.

What is an Object of Study?

I will use the two categories of the world to describe the objects of study: 1) the physical world, and 2) the cultural world. The physical world is the part that bumps us around and is apart from someone's intervention. Cultural artifacts are human-made things that affect our lives in many different ways. Objects of study in the physical world would include things like the sun, rain, air, light, soil, deer, human, plants, or coal. Objects of study that I would consider cultural artifacts include tangible objects like chairs, houses, newspapers, books, films, or computers, as well as more abstract objects like parallel lines, revolutions, justice, democracy, LOGO, gods, or literacy.

Each of the aforementioned objects of study is or can be starting points in the effort of making sense of the world. They are not the truth, or even the true starting points, they are simply a way to get the conversation and the study going.

Examples of Objects of Study

This section will attempt to exemplify the types of objects of study mentioned above. One example each will be given for a physical world object of study, a tangible cultural object of study, and an abstract object of study.

The first example of an object of study will be a frog. A frog would be considered part of the physical world. The frog exists outside of direct human intervention, though it has been objectified by humans as being different from fish, snakes, insects,

lizards, or any other part of the world. Once again the object of study, the frog, is pointed out to the student as a historically worthy object of study. In a postmodern education the discourses about the frog, its biology, its ecology, its life, its habitat, etc., are not imposed on the students; rather, a student may be directed toward this part of the world as an interesting object. The object of study is not reified; its depth of study, continued study, ethics of being an object of study, or even its worthiness of study are not imposed or made commonsensical.

The second object of study will be a chair. This object of study is created and objectified by humans; therefore, it is a tangible cultural object of study. It is similar to the natural object of study but is created by humans. Similar to natural objects, it can serve as a potentially worthy starting point to study the world. The only difference is that a cultural object of study has a discourse that has determined its creation. It is not to say that this object of study cannot be talked about or be an object of study within another discourse. It is to say that a particular discourse gave rise to the creation of that object of study.

The third object of study is the geometric concept of parallel lines. This object of study was created and objectified by humans; however, its abstract properties render it somewhat untouchable. It is therefore an example of an abstract cultural object of study. The discourses that will surround the object of study would include perspective drawing, hyperbolic geometry, parabolic

geometry, and elliptic geometry (Lobachevskian geometry, Euclidean geometry, and Riemannian geometry). An object of study called parallel lines is central to each of these discourses. None of them have the same definition of parallel lines, and parallel lines fit into each discourse differently with different results.

Another example of an abstract cultural object of study is text. In the past text has been thought of as embedded in the objects that are associated with it. However, Derrida has introduced a discourse in which text is an object that can be studied apart from the original objects that it was intended to represent.

One particularly illuminating problematic example may also be of benefit at this juncture: Euclidean geometry. Where does it fit? Is it an object of study? Or is it a discourse?

It's both, depending on how it is used. It can be a discourse, like example 3, if it is considered an articulated knowledge base that a particular knowledge community has held up as their truth. It is a historical system of concepts, or objects of study, that has been assembled for some purpose in some context. Euclidean geometry has identified or created a set of objects of study, defined them, and linked them together in an attempt to put together a logical and consistent system or discourse. As a system, Euclidean geometry is a rigid, fixed entity as opposed to an object of study, such as parallel lines, which have a more fluid and amorphous quality. However, it can also be considered an object of

study. This can be done, if instead of looking at it as a collection of parts put together in a certain way, you look at Euclidean geometry as a single entity that you talk about and work with just like a frog or a chair. For example asking the question, "What was the impact of Euclidean geometry on economic systems?" is using "Euclidean geometry" as an object that is looked as an entity, as an object. In this way "Euclidean geometry" can be both an object of study and a discourse depending on the way one frames the concept.

At this point it is important that we look at the way identifying an object of study is impositional. This imposition is not desirable; however, it is only avoidable if we tell our students, "There is the world, create yourselves and don't talk to anyone because either you or they will have to impose direction on the conversation." This, of course, also is not desirable. Students' conversations with peers and educators are an important part of the their education. If a totally non-impositional education is the goal, the logical outcome would be isolation. The goal then is to identify a least-impositional form of education.

The concept of object of study is an attempt to minimize the imposition of our historical "truths" on the student. As one strives for the least-impositional education, the object of study points to a part of the world that has been something our predecessors have thought to be interesting. Once identified, the object of study concept will allow students to study it on their own terms. It is an

attempt to minimize the direct imposition of others' discourse truth on the study of the students. It is important to recognize that educators, as pointers to the world, cannot select anything but the objects that they or their predecessors have already objectified. How can one point to something one does not know yet?

The concept of an object of study is important because it focuses the attention of study onto something that is manageable, something that can be talked about within a given amount of time. It is least impositional because after the imposed starting point, the student can reject the defined starting point, create a personal vocabulary to deal with that starting point, study how other people have dealt with the object of study (see the next section), or even try to eliminate it as part of the their vocabulary. The important point is that the student has the freedom to choose how to deal with any given object of study. This freedom does not mean negation or absence of the history of the object of study (the nature of its presence will be explored in the next section). It just means that the students are allowed an opportunity for self-creation if they so desire, when they so desire.

In summary the object of study is a part of the world that tradition tells us is interesting and worthy of in-depth study. It is not to be confused with the descriptions that are associated with it. This is not to say that descriptions of an object of study are not educationally important; it is to foreground the importance of the

object of study. The construct of an object of study is an attempt at being educationally least-impositional while allowing the students a starting point from which to make sense of the world. This will provide the student with the freedom to explore the object of study and the world on their own terms if they so desire.

The object of study is framed not in an impositional statement of "This is what IS!" but rather the least-impositional statement of "This is what has been useful to some and may possibly be interesting to you."

6E. Connectivity

The modern ideal of the educated man[280] was the autonomous rational subject who was detached from the contingency of his life. However, in the postmodern era, with the rejection of this ideal, connections have become much more important. They seem to be a method to represent the relativizing truths, destabilizing power relations, while at the same time provide a space for students' voices. They seem to better represent the postmodern world. In the context of a single unified Truth, with a single method of obtaining Truth and delivering Truth, connections seem to be a biased distraction. The linear book, the single teacher, the uninterrupted lecture seemed are all characteristics of a modern education. In the postmodern era, we must break the linearity of

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[280] I use the masculine pronoun here purposively, because in the modern "man" was also a part of the ideal.

the single author's book and single teacher's lecture. Connections are a way to do this -- connecting students back to the world while at the same time connecting them to the conflicting metaphors that have been used to view the world as they are studying it.

The postmodern education will be an education of connections that provides a space for students to connect their ideas and their words into the text of the works they read. It will provide a space to add information or criticize the author and work the text into something that is meaningful to their study of the world. Text will become something that they can engage and disrupt while representing the assumptions that are unwritten, the violence that the text does to them, and a position outside of the text.

There will also be the connection of fellow students engaged in similar study activities that can work in conjunction to their mutual benefit. Students can also debate each other and explore the self-engendered paradoxes they encounter within themselves, between the other students, or with the world. This is the point at which deconstructionists argue that they may find their greatest insights into themselves and their situation.

There will also be connections between competing and conflicting knowledge communities that can dig into each other's text and ideas and vie for the attention of the student. Once again, the aim is not to provide the "full picture" but rather to represent the conflicting relationship between these knowledge communities. These types of connections are impossible because no one teacher

can present multiple viewpoints in a meaningful way because he or she is implicated within a particular viewpoint. Connections between the student and these conflicting knowledge communities and between these conflicting knowledge communities is the only honest way to put the student into the web of these conflicting knowledge communities.

Connections also provide a powerful mechanisms for the entree of marginalized voices into education. The Others can easily infiltrate the dominant vocabulary and actively disrupt the discursive practices and the power structures that disempower them. They can reach the student at every juncture that these formations occur and battle for the ideas of the next generation. This can be done without forcing the student into the margins.

These connections can also represent the supporting social structures of the text being read. By representing the text as a historical artifact that came into being because of specific power structures, the computer can represent the history of the text as well as the words of the text. There can also be additional support for the text based on the agreement of the different knowledge communities on their truths of a specific object of study.

Theoretically, the computer has an amazing ability to do all of these types of connections that were extremely limited with the technology of book-based education. The computer has the facility to make the connections of the presentations of differing knowledge communities as well as the connection of students'

voices to the presentations of knowledge communities. Telecommunication allows for the connections of students to students and students to a multitude of knowledge community representatives. Artificial Intelligence offers us some ability to connect the student with the resources of an appropriate knowledge community. The computer is also an appropriate connector between the student and lectures, talks, plays, exhibits, discussion groups, courses, and other special events by calling the student's attention to this events. It cannot represent on the computer, but it can help organize and bring these events to the attention of the student. The next chapter will characterize the computer as a postmodern catalyst and facilitator.

6H. Education as Conference

In this concluding section of a speculative postmodern education, I will argue that in the postmodern era we should change our image of education. Instead of the master filling the vessel, the expert modeling the clay, the wise man extracting the wisdom hidden within, or the builder constructing new cognitive structures, I would argue that an appropriate postmodern metaphor for education is the conference.

The conference is organized around a topic or, to use the vernacular developed here, an object of study. There are many different conferences on many different objects of study, many different conferences on practically the same object of study;

however, each conference has a particular history and political motivations for its creation. We go to conferences mostly because we want to go; however, they are an imposition and usually take us out of our own study of the world. We are given a program that contains all of the formal presentations, from which we must select. We pick and choose those presentations that are addressing objects of study that we are studying or something that we are curious about. Sometimes we go and we find out that they are not studying anything at all like the object we are studying, and we are free to leave. Sometimes we find something that is really beneficial to the studying that we are doing. We have the opportunity to interact with the presenters, within the presentation, after the presentation in the hall, or later at another presentation or event. We also have the opportunity to interact with the other conference attendees about the presentations or about their studying or ours. We also have the opportunity to present at the conference if we think we have something that others would like to hear. Like the others, we can present our message using any method and any media we would like.

Conferences can be inefficient, they can be chaotic, the connection you make can help you, redirect you, or be of no value to you. The conferences that you attend are determined in many different ways, through colleagues, through publications, or other reference sources. The conference is mostly for personal edification and can be useful in development of the depth and

breadth of the private self. The conference in many ways is a postmodern, educational institution and thus, may be a metaphor that will be useful in future discussions of a postmodern education.

This concludes an exploration of possible educational metaphors and practices that I have hypothesized may be useful in the creating an educational environment that is based on postmodern theory. The next chapter will deepen the tentative gropings at understanding the function that the computer might play in this environment. The chapter will argue that the computer may be "the" postmodern educational medium.

CHAPTER VII

THE COMPUTER: POSTMODERN CATALYST/ POSTMODERN EDUCATIONAL FACILITATOR

Up until now the computer has been introduced into this work as the reigning monarch of media, doing what we have always done but doing it faster, cheaper, and with larger amounts of information. In some respects this increase in speed and amount with a correlated decrease in cost has had some significant postmodern effects. However, this chapter will develop the proposal that the computer does not just have an effect on speed, cost and amount of information but has, and will continue to have, much deeper and tremendously more powerful postmodern effects on our entire society. After exploring these effects I will argue that the computer is the medium of choice in a postmodern educational environment. The chapter will start with an exploration of the effect of computers on language through electronic language and how artificial intelligence can make diverse information accessible to the postmodern student.

The computer has been seen, by many in the postmodern community, as a catalyst for postmodernism. For some, such as

Fredric Jameson[281] and Richard Terdiman[282], the computer has generated the information explosion that leads us to the "information age" which some argue, is just another name for the postmodern epoch. Mark Poster[283] has most directly argued that the computer has played a major role in the postmodern crises in representation, in subjectivity, and in authority that have been documented earlier as major impacts of postmodernism on society and education. Lyotard[284] has also tied the computer to the postmodern crises of the acquisition of knowledge in scientific research and the transmission of knowledge in education. Richard Lanham argues that the connection is so strong that, "one might call the personal computer the ultimate postmodern work of art."[285]

This view of the computer as a catalyst for postmodernism is not, however, pervasive in the postmodern community. John Murphy represents some postmodern thinkers when he states that "computerization, simply put, may bring modernism to fruition, as

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[281]Fredric Jameson, *The Political Unconscious* (Ithaca: Cornell University Press, 1981).

[282]Richard Terdimen, *Discourse/Counter-Discourse: The Theory and Practice of Symbolic Resistance in Nineteenth-Century France* (Ithaca: Cornell University Press; 1985).

[283]Poster, *The Mode of Information: Poststructuralism and Social Context,* 1990

[284]Lyotard, *The Postmodern Condition,* 1979.

[285]Richard A. Lanham, "The Extraordinary Convergence: Democracy, Technology, Theory, and the University Curriculum," *The South Atlantic Quarterly,* Vol. 89, No. 1, (1990), p. 37.

a result of rationalizing completely the educational process."[286] I believe in some ways Murphy is probably correct: the computer does seem to take the rationalization of the world to its logical extreme. The computer's reduction of all information to 1's and 0's and manipulation of them with explicit logical and arithmetic operations is a rationalistic fantasy. However, I will demonstrate that computers rather than only simplifying, also creates complexity; rather than only being rational, also allows for the representation of the irrational; rather than only being linear, also creates intricate webs of information; rather than only being univocal, also creates polyvocality; and rather than only being the simple binary oppositions of the 0's and 1's, also creates plurality. In fact those who have tried to use the computer to rationalize the mind, the artificial intelligence scientists, have illustrated to us the difficulty of this quest and instead have shown us the ways that the computer has pluralized our notions of the mind.

This section will proceed with a brief overview of the current state of personal microcomputer systems. The format of the rest of this section will be first, to describe a selected few computer projects and the important functions they embody; and second, to discuss how that project has been a postmodern catalyst.

7A. Today's personal computer

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[286]John W. Murphy, "Computerization, Postmodern Epistemology and Reading in the Postmodern Era", *Educational Theory*, Vol. 38, No. 2, (Spring, 1988), p. 179.

Today's personal computer has an ever increasing processing speed[287]; access to more locally contained and controlled memory[288]; ability to control a wider range of peripheral devices[289]; access to thousands of commercial databases[290] via a modem; access to other computer users locally within a classroom or a building via local area networks (LANs); access to users across the nation and the world via modems directly through the telephone lines or through information services like Compuserve, Bitnet, FrEdMail[291], and Kidsnet[292]; an ever widening variety of

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[287]The new Macintosh IIsi can access information in 80 nanoseconds (billionths of a second) and processes information at 25 MHtz, which roughly translate to 25,000,000 states executed per second. Processing speeds are rapidly coming to the point of insignificance in human terms. For example, is there really a meaningful difference between having your word processor start up in 1.20 seconds rather than 1.28 seconds?

[288]For example, the Compton's Multimedia Encyclopedia CDROM contains 8,784,000 words; 15,000 photographs, charts, and diagrams; 60 minutes of audio; and 45 separate animation sequences on one commercially available disk.

[289]Examples include pheripheral devices such as video disks, robotics, motorized Legos, electronic music instruments via a MIDI interface, screen projection systems and even include the exotic Private Eye which is a computer monitor that shrinks images from a 12 inch screen onto a screen 1.1 inch x 1.2-inch. It is able to do this by using semiconductor and optical techniques. This product, created by the Reflection Technology company, functions like a computer monitor, but weigh less than 2 ounces that can be worn like a pair of single lense glasses.

[290]These include access to news wires, Grolier's encyclopedia, Travel, money markets, health, cookbooks, general bulletin boards, etc.

[291]FrEdMail is a telecommunications network that supports the world-side sharing of student writing to provide the student with "real audiences and real purposes to motivate writing".

[292]Kidsnet is a NEA sponsored online database or clearinghouse of educational programs on television and radio. It is also used by students to collect data from each other for classroom based research on topics such as effects of acid rain, pollution, climate, weather, hurricanes, or earthquakes to name a few.

computer-assisted instruction[293]; and computer productivity tools[294]. This is by no means a complete overview of computers or computer applications in education; it is meant to lay some basic groundwork about computers. Furthermore, the following section will also not be a complete look at the different functions computers will serve within a postmodern environment. Rather it shows some instances of how computers are both a postmodern catalyst and facilitator in the postmodern educational environment. I will explore two areas: first, a look at electronic language and, second, a look at a specific type of artificial intelligence application to education. One final word of caution: the following framing of computers as a postmodern catalyst and facilitator is neither a refutation of, nor a replacement for the modernistic applications of computers.

7B. Electronic Language

Electronic language has taken many forms. Each of these forms, it has been argued, is the natural progression of the mode of communications that minimize the negative effects of time and distance. It will be argued that these are not the only, or most significant, effects of electronic language on communications. This

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[293]The most common categories of CAI are drill, practice, tutorial, simulation, games, and problem solving software.

[294]These include wordprocessing, data base mangers, spreadsheets, voice synthesis programs, spelling checkers, graphics packages, graphing programs, music editing programs, and desk-top publishing programs to name just a few.

section will look at some of the more interesting forms of the electronic language: Electronic Journals, Collective Authorship, Electronic Conversations, and Hypermedia.

Electronic Journals

The electronic academic journal is fairly new to the academic community; there currently exist about 10 electronic journals. They offer a number of advantages over their printed counterparts, storage and speed being the most notable. The first advantage is storage: with advances in CD technology, we can store 100 books, each 500 pages in length[295] on one CDROM that can be stored in a case approximately 5" x 5" x 3/8" in size. The other advantage is speed. Computers facilitate an incredible increase in the speed of access, to the point where anyone with a personal computer and a modem can almost instantaneously access any publication they wish from the comfort of their own office or home. There would also be a dramatic reduction in the time of getting scholarly work to the readers.

For example, the American Association for the Advancement of Science is planning a new electronic journal where "the entire process [submission-to-publication], including the review of an article by other scientists, will be done on computer."[296] There are other electronic journals including *Philosophy and Theology*,

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[295]This is a stack of books over 16 feet tall.

[296]Kim A. McDonald, "Despite Benefits Journals Will Not Replace Print, Experts Say," *The Chronicle of Higher Education,* (Feb. 27, 1991), p. A6.

published by the philosophy department at Marquette University and *Journal of the International Academy of Hospitality Research*, published by the scholarly-communications project at the Virginia Polytechnic Institute and State University. A unique case is *Postmodern Culture*, which is an electronic journal of interdisciplinary criticism. Through Bitnet, writers can submit papers which are reviewed and subsequently published, again via Bitnet. *Postmodern Culture* takes advantage of the computer's facility to create journals quicker, to give the reader quicker access to new articles, and quicker access to all articles. However, it surpasses the scope of the ink and paper journal. It does this by capitalizing on the computer's facility to provide the reader with the option to respond to text directly through Bitnet and have those responses "published" or appended immediately into the public text of the journal for future readers, after editorial approval.

The electronic journal is an exciting postmodern happening. The journals put the reader in a position to respond and react to the author directly - not in the normal way of private correspondence, where the author can hide behind the veil of authorial privilege, but rather in a public way (in fact, in the same public way in which the author originally presented the message, through the journal). In this way text becomes a contested field, something to question, argue against, expand and/or defend. Thus as respondents react to the original text it becomes pluralized and

can no longer stand monolithically in its unity, univocality and authority. One might argue that this is already done regularly in scholarly journals where certain articles are responded to in later issues[297]. However because this is often done later, due to the backlog of the publication and submission process, the reader of the original article does not even know that there is a set of responses. Furthermore, the responses usually are limited to only a few respondents accompanied by a rebuttal from the original author.

The computer serves as a postmodern catalyst by creating a journal where there is "never a final cut" or a final printing. Because the electronic journal can always be updated and added to, the reader has immediate access to the original article, the responses and the rebuttals. Responses and rebuttals are available no matter whether they were accepted a month after the article was originally published or were accepted the day before the reader is reading it. Because all responses and rebuttals can be appended to the original with little additional cost or processing, the interaction between author and respondents or respondents and other respondents is potentially great. The electronic journal creates a "space" for the reader's voice that the ink and paper journal easily marginalizes on the basis of practicality, thus making

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[297]One noticeable exception is the journal, *The Behavioral and Brain Sciences* which elicits responses to articles before they are published and then publishes responses with the original article.

the computer an ideal medium for the postmodern age where "no content is unchanging."[298]

The electronic journal erodes the authorial privilege by broadening the article to show its supporters, its critics, its complexities, and its marginalized voices. The text can no longer stand as an unbreachable fortress when it enters into the influence of computer. It becomes easily accessible to the critique and response of the reader in a very meaningful and public way. It also allows the reader access to the position of a writer in the same public way.

Collective Authorship

The second form of electronic language is the collective authorship. Locally, via LANs, and world-wide, via modems, students can now collectively create documents with extreme ease. This goes far beyond the collective writing of a newspaper or journal where everyone has an individual section to complete and which an editor compiles, making slight modifications and corrections. The computer allows a group the ability to work at the basic levels of authorship, i.e., word selection, sentence construction, creation of logical flow, and paragraph organization. Each member of the collective can look at, contribute and contest the ongoing word-by-word construction of the text. This is done in an undergraduate English course at Jackson Community College in

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[298]McCracken, p. 25

Jackson, Michigan, where groups of 5 students on 5 computers are connected through a LAN; one of their assignments is to collectively create an essay. The instructor says that the experience "is not better [collective authorship], it requires a different set of skills."[299] The instructor's observations are interesting and I would argue that the difference she sees is the difference caused by this postmodern event. Where, in her mind, the assignment is different, I would say that the assignment is postmodern. This postmodern assignment was facilitated, made possible, only by the computer configuration acting as a postmodern catalyst within the classroom.

Supporting this line of argumentation is an interesting postmodern experiment on collective authorship that was conducted by Jean-Francois Lyotard, who directed an exhibit in France in 1984-5 at the Centre George Pompidou entitled "Les Immateriaux." As a part of the exhibit 50 relevant words were selected and twenty-six writers were asked to create short comments or definitions of these words. These definitions were stored on a computer and the writers were then able to append any of the definitions.

> Lyotard anticipated that, through the use of computers in the composition of texts, language itself might be changed, becoming less oriented toward consensus than

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[299]Dean Whitlow, (writer and producer) *Macintosh in the Classroom.* (Cupertino, CA: Apple Corporation, 1991).

> toward what he calls "differends" by the multiplication of definitions and their ease of alteration.[300]

Derrida, who also participated, submitted that "authorship becomes 'indeterminate' and 'disappears' as computer technology erases the author's voice and hand."[301]

Electronic Conversations

The third form of electronic language is the electronic conversation. The electronic conversation is an interesting mixture of the postal service and the telephone service that can be found in almost all computer information services. It takes two or more people equipped with personal computers and modems that have access to the same information service. The electronic conversation can be like a phone conversation in that you can call someone up and talk to them. The big difference is that the message is typed out instead of spoken into the receiver. The electronic conversation can be like corresponding through the mail by typing each other messages to be left in the receiver's electronic mail box, the differences being that electronic letters are immediately put in the receiver's electronic mail box and messages can be sent to just one person, to a small identified group, or to everyone on the system. In this way you can have an electronic conversation while not having to be on the computer at the same time.

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[300]Poster, p. 114
[301]Ibid

Poster documents one computerized information service in particular, the French Minitel system[302], an initiative originated by the French government to distribute small computers to telephone customers to take the place of the telephone directories. Minitel rapidly grew by adding thousands of information services for its customers. The "messagerie" was added to the system in the early 1980's and became a big success. Soon half the calls were for the messagerie. The French government enacted legislation that no censorship would occur; the only requirement is that the users only use one name. They can use aliases and can change their name, as long as they only have one at a time.

Mark Poster draws some evocative observations from a study of the Minitel system. I will rely on his insights and quote him at length. He observes that

> [i]n the small communities of tribal society, individuals are "known" from birth, enmeshed in extensive kinship structures that reproduce identity in daily experience. In this context the subject is social, constructed and reproduced as a relational self. In cities, by contrast, the individual is extracted from such identity reproduction, but here conversations, . . . require face-to-face positioning and therefore "bodily signatures" which specified the individual so that, if necessary, actual identities could later be recalled. With writing and print, identity is further removed from communication, but authorship, even under assumed names, serves to fix identity. With computer message services, language use is radically separated from biographical identity. Identity is dispersed in the

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[302]Ibid, p. 119

> electronic network of communications and computer storage systems.[303]

Poster argues that this identity dispersal causes changes in relationships because

> [f]or the first time individuals engage in telecommunications with other individuals, often on an enduring basis, without considerations that derive from the presence to the partner of their body, their voice, their sex, many of the markings of their personal history. Conversationalists are in the position of fiction writers who compose themselves as characters in the process of writing, inventing themselves from their feelings, their needs, their ideas, their desires, their social position, their political views, their economic circumstances, their family situation - their entire humanity.[304]

The subject is no longer confined to those things or markings that society, history or context has defined for that person. The autonomous, rational self of Descartes; the dominated, controlled self of Marxism; the depraved self of Christianity and all others are being undermined by this electronic postmodern catalyst. For, "[i]n computer conversations, however, a kind of zero degree or empty space of the subject is structured into practice: the writing subject presents itself directly as an other."[305]

Poster does warn us not to consider the computer environment as getting at the essential self. He notes:

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[303]Ibid, p. 117
[304]Ibid
[305]Ibid, p. 118

> I am not claiming that in fact electronic messages enable some "total" or "true" act of self-constitution, but instead that a reconfiguration of the self-constitution process, one with a new set of constraints and possibilities, is in the making[306]

Thus instead of thinking of the computer as *the* medium for finding the true self, it should be thought of as the one that reconfigures the process, and undermines the past technologies of the self that have controlled us in the modern era.

Reflecting back to the idea that the computer would bring rationalism to fruition, the opposite seems also to be the case and the computer is acting to support postmodern conceptions of the self. Poster puts it well when he observes that ". . . in the world of the Superpanopticon, surveillance over the individual is complete. The domain of freedom then retreats to the computer monitor and the invented identities that can be communicated through the modem."[307] What happens instead is "that freedom is now being associated not with the assertion of individual identity in either the public or the private spheres but with complete anonymity."[308]

As we can see, the electronic conversation can help us in education with the crisis in subjectivity by providing a catalyst not to find a true theory of subjectivity, but rather undermine the current one, thus creating the mode to get out from under the current theory of subjectivity and "redescribe" ourselves. The electronic conversation is also interesting as it has been used in the

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[306]Ibid
[307]Ibid, p. 120
[308]Ibid, p. 119

working situation as well. Within the electronic conversation, the computer creates a safe space for open criticism and the correlated decentralization of power. Hiltz and Turoff note that

> [i]n problem-solving situations at synchronous conferences, pressures are great to conform to existing paradigms or to an emerging consensus. By contrast, computer conferences, with the veil of anonymity and the temporal/spatial distance they provide, encourage open criticism and the presentation of unpopular or eccentric points of view.[309]

This situation has occurred within IBM when they instituted a program in which the complaint box was taken off the wall and was computerized. This computer complaint and idea box was made a part of all employees' workstations where they could respond when the idea or complaint occurred to them and do it anonymously. To further the idea of the complaint box, they made all of the complaints available to all of the other employees. In a company that is well known for its "blue suit, white shirt, and tie" image, in the sometimes "tennis shoes and jeans" corporate world of computers, the IBM management was surprised and bewildered at the flow of "tough, angry criticisms [that] were raised about company policy, criticisms that named names and pulled no punches."[310] These critical conversations quickly became too much for the IBM management as they could not squelch the critics due

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[309]Starr Roxanne Hiltz and Murray Turoff, *The Network Nation: Human Communication via Computer* (London: Addison-Wesley, 1978), p. 105.
[310]Poster, p. 86

to their electronic anonymity. The "[i]nsubordinate 'conversations' were everywhere and nowhere."[311]

Once again the computer, through the electronic conversation, is a postmodern catalyst for undermining theories of subjectivity by providing an anonymous space for the creation of the self and the criticism of the structures that suppress the self.

Hypermedia

The fourth form of electronic language, hypermedia, is arguably the most radical. Hypermedia's roots have been traced to the notion of the "memex" introduced by the Vannevar Bush, Roosevelt's science advisor and leader of the Manhattan Project, in an *Atlantic Monthly* article published in 1945. He envisioned the memex as a mechanical informational retrieval device to handle the information explosion in his office created by scientific developments prompted by World War II. His idea was refined and revised into the term *hypertext* which was coined by Theodor H. Nelson in the 1960's.

> [A] hypertext document system allows authors or groups of authors to *link* information together, *create* paths through a corpus of related material, *annotate* existing texts, and create notes that point readers to either bibliographic data or the body of the reference text.[312]

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[311]Ibid

[312]Nichole Yankelovich, Norman Meyrowitz, and Andries van Dam, "Reading and Writing the Electronic Book," *IEEE Computer,* vol. 18, no 10, (1985), p. 15-30: original emphasis.

Nelson and Douglas C. Englebart joined forces and began to develop the first computerized hypertext systems. These first text-based systems were created on main-frame computers and were considered to be the next evolution of the book, albeit a nonlinear book. The introduction of Bill Atkinson's HyperCard by the Apple corporation initiated a popular explosion of the idea of hypertext.[313] With the development of lower cost video players and personal computers that could control them, the hypertext system could now incorporate not only text, but still pictures, audio, and video, which quickly vaulted the hypertext system into a hypermedia system. In a hypermedia system any form of electronically encoded information can be linked to any other form. These forms include text, static graphics, animated graphics, static photos, video, sound, and music.

The hypermedia notion has been advanced at Brown University, which acquired several grants to create a hypermedia system, called Intermedia. An Intermedia prototype system was created around two of Brown University's undergraduate courses: English 32, English Literature from 1700 to the Present, and Biology 106, Plant Cell Biology. In his article, "Changing Texts, Changing Readers: Hypertext in Literary Education, Criticism, and Scholarship" George P. Landow describes the application of Intermedia to the English 32 course. The program had 14 IBM

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[313]While not the first personal computer hypertext software on the common market, HyperCard was the most accessible; Apple gave it away with new computers and sold it for under $50.00 to everyone else.

RT/PCs that formed terminals that could access the network of 1,000 text and graphic files joined by over 1,300 links.[314] English 32 is a traditional survey course allowing beginning students exposure to a wide range of authors and literary movements. Intermedia provided the students with far more than simple access to selected works of authors and movements. What it does is to represent the "interrelationships of authors, movements, and various extraliterary cultural context, including those provided by social, religious, political, intellectual, artistic, and technological history."[315] This is accomplished by no longer using the modern book's convention of the table of contents or index lists. Instead hypermedia presents these complex interrelationships graphically to enable "the user to traverse those relationships easily, establishing connections between pair sets of data and among larger groups of material."[316]

The notion of hypermedia is overwhelmingly postmodern, for it can represent the non-linearity of the text, put readers in control of the production of the text, and represent the text's "other" within its presentation. Additionally, it provides space for criticism outside of traditional technologies of control and

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[314]Even though this is not an impressive number, just joining each file once to every other file would require just under 500,00 links, it is an interesting start.

[315]George P. Landow, "Changing Texts, Changing Readers: Hypertext in Literary Education, Criticism, and Scholarship," in Bruce Henricksen and Morgan Thais (eds.) *Critical Theories and Pedagogies* (Urbana: University of Illinois Press, 1990), p. 137.

[316]Landow, p. 139

information in smaller physical space, with decreased access time, and in the context of other information.

The nonlinearity is an important characteristic of hypermedia, for it once again demonstrates the computer's function as a postmodern catalyst. The presentation of information in a nonlinear format is discussed in the hypermedia community as a web of associative links, in a fashion surprisingly similar[317] to that of the deconstruction community (e.g. Miller and Derrida) whose favorite metaphors are of weaving and webs of information. Hypermedia is a method of explicitly representing the text's web-like characteristics, in a way that its linear presentation, by its very structure, must suppress. The web-like presentation also allows for the representation of two of Derrida's related concepts, meaning deferral and dispersal. Meaning dispersal is represented because the definitions and words can now be linked directly and explicitly. Thus the dispersal of a word's meaning is represented by its link to its definitions, whose words are once again linked to their corresponding definitions. This dispersal is represented, not in some remote dictionary, but within the textual presentation itself. Similarly, meaning deferral is represented within the textual presentation itself, because as the readers are moving through this web of definitions, at some point, they must defer this search and return to the original text. The only other option is to get lost and forget the original text altogether. In either case they

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[317] or maybe not so surprising.

must defer meaning or be endlessly traversing the web of definitions. At this junction I should reiterate the admonishment that this new representation does not create a "true"or "total" representation. Rather, it creates a representation that deconstructs such totalizing myths by its very structure, constantly undermining these myths and reminding the reader that there is no "truth" somewhere behind the words.

In the linear presentation of text the writer provides the one and only path through the content. The author, through linear presentation, has a powerful technology of control over the reader. In hypermedia that authorial power could collapse under the influence of these information webs and associative links created by the author or by readers.[318] Thus the hypermedia system puts the reader, instead of the writer, in control of the sequence of the text. In describing the Intermedia system Landow resonates to this position:

> Intermedia is designed, in other words, to free students rather than confine them. Indeed, by allowing the student to create his or her own route through knowledge, it permits - or rather demands - choices. Intermedia thus provides support for Roland Barthes' demand that the "goal of literary work (of literature as work) is to make the reader no longer a consumer, but a producer of the text"[319]

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[318]Even though hypermedia is currently not frequently used by the readers in this way; rather, it is usually used by the reader to select among pre-defined links.

[319]Landow, p. 137

Hypermedia can also represents the text's "other" within any and every part of its presentation. It takes the facilities of the electronic journal to continually append the journal, thus never making a final cut. It adds the facility to not just respond to the contested field of the article, but moreover to expand the contested field to an extremely fine grain. Then the voices of the "other" can be connected to the text with whatever medium they wish. In fact, if one had the time, the others could connect themselves, via modem as with the electronic conversation, to the text and converse with the reader. The hypermedia system also provides an anonymous space for criticism that is outside of traditional technologies of control; thus, critics could have their opinions represented on an ongoing basis. The reader also could enter into a web of information outside of these technologies of control and present them to future readers. The hypermedia system also provides a backdrop or context to the text by historicizing it,[320] by representing alternative or conflicting viewpoints, and by connecting it to its sources,[321] to name a few ways.

Finally, the hypermedia can create the open and free play of signs that is an "open plurality of discourse" that celebrates "a move to an affirmative thought of disjunction and multiplicity"[322]

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[320]The author can represent the changes that have been made with successive editions.

[321]This could be definitions or presenting actual works instead of supporting citations.

[322] Christopher Norris, *Deconstruction: Theory and Practice* (New York: Methuen & Co., 1982), p. 49.

that "shakes up an endless contradiction, marked out by the undecidable syntax of 'more'. "[323]

Electronic Language

Print allows the writer to permanently fix his words onto a page and thus allows him to submit his work to the judges of the "Great Works." The page can continually be judged because of its permanence throughout time and space. The electronic "page" is not like that; it has no true permanence. Its words are nothing more than "a text repainted sixty times a second on phosphor." Its permanence lasts only 1/60th of a second. On this level, a level beyond human perception, the electronic text is ever changing, unstable, revisable, dynamic, volatile, editable, and perhaps deconstructing.

The printed page is material; it is something that you can hold onto, grasp, feel, throw or burn. To the phosphorous electronic page you can do none of these things. A large amount of the cost and access time associated with books is related to the raw materials and labor involved with the printing process, not the creation of the text. To put it another way, the cost is in the vehicle to deliver the text, not with the text itself. As seen in the example of electronic journals, the cost of the vehicle is reduced. In fact the book that I ordered at a conference two weeks ago, if

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[323]Walter Brogan, "Plato's Pharmakon: Between Two Repetitions," in Hugh J. Silverman, (ed.) *Derrida and Deconstruction* (New York: Routledge, 1989), p. 11.

electronic, could have been sent to me in a matter of minutes via a modem. If this electronic transaction would have occurred, no material would be transferred; instead, the modem simply arranges the magnetized oxide on my disk in a certain pattern, a pattern that can be translated later to words on my computer screen. Poster observes:

> Speech is framed by space/time coordinates of dramatic action. Writing is framed by space/time coordinates of books and sheets of paper. Both are available to logics of representations. Electronic language, on the contrary, does not lend itself to being so framed. It is everywhere and nowhere, always and never. It is truly material/immaterial.[324]

Indeed the electronic language, that the computer makes possible, exemplifies that rather than simply and exclusively ascribing the computer as a part of the rationalistic project, we should also look deeply at the computer as a part of a postmodern project. I believe Poster can sum up this section best:

> computer writing is the quintessential postmodern linguistic activity. With its dispersal of the subject in nonlinear spatio-temporality, its immateriality, its disruption of stable identity, computer writing institutes a factory of postmodern subjectivity, a machine for constituting non-identical subject, an inscription of an other of Western culture into its most cherished manifestation. One might call it a monstrosity.[325]

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[324]Poster, p. 85
[325]Ibid, p. 128

7C. Artificial Intelligence - Postmodern Facilitator

This section will look at a specific type of artificial intelligence program that represents the high-end computer programs that could serve as a component of the information-base manager. These managers bring relevant information to the students through attempts to model the students' thought processes, while they are working on some problem, and direct appropriate resources to help the users both learn and solve the problem. I will argue that it is not important whether or not these programs do in fact "truly" model the users correctly, but rather that the attempt to deliver information and instruction to the user is useful. The first project is called WEST.

AI - WEST

WEST, an artificial intelligence coaching program for an informal learning activity, was designed by Brown and Burton.[326] The program is based on a computerized board game where the object of the game is to move from 0 to 70th position on the board. The moves are determined by arithmetically combining three randomly generated numbers with two arithmetic operations for the greatest benefit to the player.[327] However, the game board is not a straight line, but rather a serpentine with bridges that can be

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[326]Richard R. Burton and John Seely Brown, "A Tutoring and Student Modeling Paradigm for Gaming Environments," *ACM SIGCSE Bulletin*, vol. 8, no. 1, pp. 236-246.

[327] For example: if the computer randomly generates the numbers 3, 2, and 3, combinations could include 3+2+3 (answer 8), 3x2x3 (answer 18) or 3/3+2 (answer 3) to name a few.

used to cut corners. Thus the best move or equation, the move that advances the player closer to the end, is not necessarily the one the yields the greatest number. Sometimes it would be better to create an equation that yields a smaller number if it means landing on a bridge that can cut a corner.

Brown and Burton created a computer coach that aids the student in playing the game more effectively. The coach is a user-model based on differential modeling of the expert system's best choice and the student choices. This modeling creates a history of the student's bad moves and from that history derives game-playing skills for potential tutoring. These skills (or, as Brown and Burton refer to them, issues) consist of arithmetic skills, game skills, and strategies.[328] Once a student has made enough bad moves, the user-model isolates a particular skill or issue on which to tutor the student. Then the tutor waits for the opportune time[329] and interjects instruction on how to play the game better. The AI system of WEST interjects instruction to the student based on what that student is doing on her own terms. This is an important notion to the current project because the computer's facility to direct information and instruction to a student in context

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[328]For example, an arithmetic skill: using the numbers and operations to get the maximum score; and a game skill: using bridges when they are available.

[329]The opportune time was determined by a set of rules of thumb regarding good tutoring strategies (ie. always coach by offering the student an alternative move that both demonstrates the relevant skill and accomplishes obviously superior results; never coach on two turns in a row, no matter what, and so forth)

of the student's initiated exploration, activity or play fits well into this conception of a postmodern education. It fits well because this system could be modified so that, instead of interjecting instruction, it would simply indicate that the system had identified instruction that might be useful in the student's activities. Thus the potential benefits of the instruction can be directed to the student without controlling the student's educational environment.

There have been other projects that use the same techniques. Among them are the work of Michael Striebel in the MENDEL[330] project, involving the teaching of high school students genetics, and the word of Lucy Suchman, involving the teaching of office personnel how to work Xerox machines. In each of these cases, whether the students are trying to play an instructional game, conduct basic genetics research, or make sophisticated copies, a computer is used to collect information about the actions of the student, make some "decisions" based on some set of heuristic rules, and direct some instruction that may be of use to the student in that context.

Notice that these AI system are trying to act intelligently; however, the judgement of whether or not the AI system did in fact act intelligently is of little global concern. Rather the judgement as to whether or not it acted intelligently need only be determined by the criterion of whether or not students found the

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[330]Michael J. Striebel, (et. al.) "MENDEL: An Intelligent Computer Tutoring System for Genetics Problem-Solving, Conjecturing and Understanding," *Machine-Mediated Learning*, vol. 2, No. 1&2, (1987).

simply checks the entire piece at once and takes the user through the piece one "mistake" at a time. For the most part in either option, the closer the student is to the correct spelling of the intended word the more likely the spellchecker will be to suggest the correct spelling of the intended word. Furthermore, the more incorrect the spelling, the less likely the spellchecker will suggest the correct spelling. The student must at least get close to the spelling for any spellchecker, human or computer, to be effective. The spelling of the word, "fadnat", cannot be correctly spelled because there are not enough letters to even make a guess[333]. Students do have the capability to make other guesses to the correct spelling of a word and submit them to the spellchecker as frequently as they wish. They also have the ability to scroll through the dictionary to find the word or clue on how to spell it. Finally, the students have the ability to insert a new word into their "User Dictionary" so that in the future the spellchecker will recognize this new word as being spelled correctly.

Why then is this a postmodern educational way to learn spelling? The notion of postmodern spelling almost seems absurd,

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[333]The spellchecker on the MS Word wordprocessor interestingly suggested that the correct spelling for "fadnat" may be "vacant." This was probably generated by some heuristic that looked at substituting "f" and "d" with the other letters that can be typed with the same finger as "f" and "d". In this case substitute "v" for "f" and "c" for "d", which leaves us with "vacnat." They another structural heuristic probably finding the consonances "cn" together was probably incorrect and switched the "a" and "n" around and checked and found "vacant" in the dictionary, thus suggested it as a possible correct spelling for "fadnat." This is a speculation, but I would guess a fairly accurate one.

for there is only one way to spell "cat" and that is c-a-t. Postmodern theory has nothing to do with that. To counter that way of thinking, let us look briefly at the traditional way of spelling. The instruction usually varies little on the following theme: every week the class gets a list of spelling words; you write the list over 5 to 10 times, write the words in sentences, and then take a weekly quiz. The traditional spelling instruction has little to do with the students' actual world and their attempts at communicating with someone. The spelling checker is a postmodern educational event for several reasons.

1. It is connected to the student's actual attempts at communicating to others via written language, thus student controlled and initiated.
2. The student can use it, use it once in a while, or not use it at all and they are not being forced into making any one choice. Thus it is least impositional because it's controlled by the user not by some external agent.
3. The spellchecker checks words based on its dictionary, thus representing authority of the dictionary but not imposing it.
4. The dictionary does not have all the possible words because of its limitation or flaws, thus representing our "truths" as politically and historically constituted.
5. The student can create their own dictionary for words that are not in the computer's dictionary thus providing space for self-creation and student control.
6. There is the possibility for multiple dictionaries (ie. personal, local, feminist, Afro-American, Native American, etc.), thus providing a pluralistic

learning environment and representation of public and private spheres.

7. The spellchecker offers possible solutions, not a definitive answer, thus not fixing the student's ideas and spelling attempts but rather serving as possible useful resources.
8. The spellchecker can be wrong (e.g. a word spelled right but used incorrectly, a word spelled wrong in the dictionary, or a word spelled correctly but not in the dictionary)
9. The reason to learn spelling is not to pass tests but rather to communicate, which is a student-initiated activity, not an educationally initiated activity.
10. It is easier to spell it correctly the first time, than to correct it with the aid of a spellchecker; therefore, there is a motivation to not use the spellchecker as a crutch.
11. It provides the opportunity for free exploration of the dictionary; thus, the student is not under indirect or exclusive control of the artificial intelligence program.
12. It provides for the representation of the politics of the spellchecker[334]

The only thing that might be added to the spellchecker to make it a better postmodern educational environment is the addition of instructional units that could remediate basic spelling problems and demonstrate ways in which students can find words when they are having difficulty. This could be based on the students' actions and tracked by an artificial intelligence model of the students' mistakes. The instruction should be approached using several different instructional strategies guided by different

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[334]The politics of the spellchecker is the politics of word selection, for any spellchecker, human or computer, must make a guess at what the user wants and that guess is in part determined by the politics of the spellchecker.

philosophies. If this were done, the spellchecker would indeed become a postmodern educational environment.

The new educational environment does not allow an attempt to control the educational process, as the prior systems attempted to do. It allows the free exploration and acceptance or rejection of the advice of these AI systems. They are framed not as the directors or interveners in the students' education, but as possible resources to be used by the students as they see fit. This takes the pressure off these AI systems to model the student all the time, perfectly. In fact it does not have to have one suggested route to the corresponding discourse; it could have many for the student to choose from. Similar to the modern spell checker, it does not have to come up with **the** one correct spelling. All it does is try to interpret the spelling actions of the users, give the users its best few hypotheses, and if it has not guessed correctly, provide access to the entire dictionary so the users can make their own attempts at finding the correct spelling.

7E. Summary of Computers and Postmodernism

The computer has facilitated a number of interesting "happenings" when it has been used in certain ways. These happenings, whether at IBM, in France, or within a classroom, I will characterize as postmodern happenings that are unique to the computer or at least occur more frequently with the computer. As the title of this chapter indicates, the computer has the facility to

serve as a postmodern catalyst and to facilitate postmodern happenings. The computer then should be utilized in the implementation of a postmodern educational environment. For to be postmodern, education will have to release the student from the modern practices of textbook, lecture-based education that predominate today. The last chapter of this dissertation will attempt to create a staged postmodern environment and then study what happens in an attempt to evoke some of the possibilities of a postmodern education.

CHAPTER VIII

EMPIRICAL INQUIRY SECTION

To begin this methodology section I would like to address the need for an empirical section in this dissertation. To this point I have firmly placed myself in the theoretical domain and might have opted to stay there throughout this dissertation. The reason that I have chosen to take this project to the empirical domain is to counter the claims that this project is nothing more than mere academic writing that is, as one writer recently put it, aloof, self-satisfied, jargon-rich, and convoluted, a criticism that is all too often leveled at postmodernism in all its many forms. As I attend national conferences that accept postmodern presentations on education, there is usually at least one practicing K-12 teacher who remarks about the "convoluted" nature of the presentation. I find this circumstance unfortunate; however, that is not to say that I wish to give up the language that I have used and developed here. I believe that only through the development of this language have I been able to think the thoughts that I have written about in this dissertation. However, I do wish it to be included meaningfully in

world of students and teachers. To do so I felt that I needed to work through and out of this dissertation's abstract language and into the classroom practices that were context-specific which may be much more responsive to our understandings of our postmodern situations.[335] Therefore, this section takes the ideas developed previously to the world of students and teachers and to study what happens when empirical work is used not to document educational change but to begin to know what to study and how.

8A. The Goal of the Empirical Study

The goal of this empirical section is to "see what happens" when we mix the theoretical constructs, the postmodern fictional scenario, and the spellchecker as an exemplar together in the world of education--involving students, teachers, subjects, and computers in a particular instructional setting. How can this be done? There are many difficulties in conducting an empirical study of a postmodern education, the most obvious of which is that there is no set of existing educational practices that have been founded and articulated from postmodern positions.[336] Because this particular theoretical framework is intended to be speculative

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[335] I am indebted to Elizabeth Ellsworth and her working through a similar issue in the area of critical pedagogy in her article: "Why Doesn't This Feel Empowering? Working Through the Repressive Myths of Critical Pedagogy," *Harvard Educational Review*, vol. 59 No. 3, p. 299.

[336] It may be argued that if we are in the postmodern era then what we have is a postmodern education. I would agree with this; however, the educational practices that are currently being used are founded in and derived from modern theories and should at least be retheorized, if they are used in this new postmodern era.

and evocative, almost by definition, it does not exist. This dissertation is an attempt to write the words, create the language, and think the thoughts that could stimulate the interest in the possibility and desirability of this type of educational environment in some yet-to-be determined situation.

Given this circumstance empirical inquiry could go in several directions. For example, one could examine present day educational practices and innovative programs through a postmodern framework[337] or document the ways in which educational practice is becoming more postmodern. These are not the avenues that I will take in this dissertation. The goal of this dissertation is not so much to document change, but rather to evoke it. In fact, the goal is to begin to imagine and speculate what a postmodern education would look like. On that basis, this dissertation is a dream to create instead of a study to verify. It is not to say that, "this is the way things are," but rather to say, "this is the way things might become or this is the way things could become." The study of something that has yet to manifest itself is most difficult. At this juncture, I cannot go to a classroom and study this type of educational environment, for it is just beginning to proclaim itself, let alone manifest itself.

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[337]Two possibilities that come to mind are the study of the spellchecker and an interesting program in Minneapolis, Minnesota where after school hours students working on homework can telephone teachers to help them with their homework.

A third option is to create a postmodern educational environment and then study it, observe it, and report the findings. This is the option I will utilize in this study because it will serve the evocative goals of this dissertation to instantiate a postmodern education and bring it to the level of a speculative educational practice. I believe only in this way can a postmodern education be visualized, concretized, and released from the trappings of its "convoluted" language. However, the process of creating this environment is as much in need of study as the environment itself. Hence, it is also vital that initial research of this type address the issues and obstacles involved in the creation of this postmodern environment.

This type of study does face several important obstacles, besides the issue of how to create a postmodern education. The first is the obstacle of the amount of resources, time, and the number of educators needed to even create a small instantiation of a postmodern education, as described here. As I have articulated it, this environment is largely characterized by pluralism and multiplicity. Hence the resources, time, and the number of educators required to create this environment would necessarily be multiplied several times over, making even the smallest instantiation an impossible task in the context of a doctoral dissertation.

A second obstacle comes into play with the current modern configuration of the schools. The students are in power

relationships that go counter to many of the characteristics that define postmodern education. To ask the student to step out of those relationships and into postmodern educational relationships would be naive. Because these relationships are so deeply a part of a student's conception of the world and himself, any postmodern education would also have to address and possibly subvert the pre-existing power relationships.

The third obstacle is time, because any attempt to even partially combat these relationships would take time. This is further exacerbated because of the speculative nature of this conception of a postmodern education. With school board and parent demands for accountability there are few educators that will be willing to allow researchers to put their students into a speculative educational environment for any substantial periods of time. This is especially true when part of the postmodern educational goals are to problematize the control and authority that the school, as an institution, has inscribed into the learner. These are just some of the difficulties involved in the study of a postmodern education.

At this point a clear set of goals for this study is important, to mark off the boundaries of what can be expected in such a speculative study. It is not the goal of this study to provide a full empirical foundation for a postmodern education. It is also not the goal to come to any conclusions about the nature of a postmodern education. Rather it is an attempt to bring these constructs to the

world of students and teachers, to begin to "know what we do not know" about postmodern education and to speculate what a postmodern education would look like. The goals of this empirical study are as follows:

1. Articulate methods to study the yet-to-be-created postmodern educational environment.
2. Document the speculative steps that are taken in the study of these constructs in the world of teachers and students.
3. Create a set of findings that will inform future approaches by illustrating the practice issues and obstacles in the creation of a PM education.

To reiterate and emphasize, the purpose of this study is to formulate some initial gropings into the realm of a postmodern edcuation. The most important goals are the ones addressing how to study a postmodern education and how to approach the creation of a postmodern environment, for they in the long run will be most informative.

8B. Researchable Questions

Given this framework there are many researchable questions that need to be studied within this environment. In a beginning list I would include the following questions:

How do you identify a discourse?
Who can and cannot be a representative?
How does a discourse representative create a "web of information"?

How do the representatives indicate to the students that they have something the students may find interesting?
How do you put students in "control"? Is the act of "putting" the student in control a form of control?
What mechanisms can representatives use to attract the student's attention?
How does the student initiate contact with representatives?
Do students take control over their learning? What if they don't?
When should authorities take over control of the learning?
What should be done if students flounder for long periods of time and do not ask for advice?

These question differ from past questions educators have looked at which concentrated on questions dealing with how to best prepare our students and our codified bodies of knowledge for the most effective and efficient method of imparting this knowledge to the student. This manipulation of the student, the external imposition of others' codified bodies of knowledge, and preparation of the codified bodies of knowledge all become problematized within a postmodern educational environment. This is because we have lost the legitimacy to directly intervene in the students' lives and manipulate them into acquiring our codified bodies of knowledge. The specific research question I will address in this study reverses the old concerns of how educators intervene in students' lives and instead considers the methods students choose in order to interact with the resources provided them.

This empirical section will address how connections can be made between the student and the codified bodies of knowledge,

given the aforementioned framework. This study will investigate the perspective of each character involved in the connection, the student and the discourse representative, and their desired methods of making the connection. The research question is specifically put into a new set of power relationships within a staged postmodern environment: How do students wish to initiate the connection with representatives? This question is important because, as previously argued, it informs my attempt to give the student powerful methods of connecting with discourses that can possibly be useful in her studies and thus is an important part of a postmodern educational environment. By researching the ways in which the actors wish to make the connection, these questions open up our understanding of how to establish powerful methods of connection. Furthermore, this research can inform the development of methods that adhere to the principles of a post-modern educational environment by addressing the immediately foreseeable problems that a non-impositional environment would present. A tentative listing of such might include:

> -how discourses can be available and represented to the student but not forced on the student;
> -how to indicate when a discourse has information that can inform the student's studies;
> -how to represent that a discourse cannot force continued connection with the student;
> -how to represent and allow for non-impositional interruptions of one discourse by other discourses;
> -how to eliminate corrections initiated by discourse representatives;

-how to compensate for student-initiated connections that may be "uninformed" connections to discourses.

The following research study, which looks at student-initiated connections with representatives, was conducted to address such issures.

8C. Methodology: Study of Student-Initiated Connection

This prior ethnography[338] studies the connection of student to educational resources from the perspective of the student. The question is put into a least-impositional context: How will students self-impose or initiate contact with discourses and their representatives?

The research design assigned a group (n=11) of preservice teachers (PSTs) the role of discourse representatives to a group (n=17) of middle school students working on triangles as the object of study. Using the interactive computer graphics to gain access to triangles, the representatives acted as educational resources about the object of study and the use of the graphics program for students within an approximation of a least-impositional educational environment. The video, audio, field notes and preservice teacher interviews collected on-site served as the data

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[338] Yvonna S. Lincoln & Egon G. Guba, *Naturalistic Inquiry* (Beverly Hill, CA: Sage, 1985) define a prior ethnography as "becoming a participant observer in a situation for a lengthy period of time before the study is actually undertaken." They use the term to direct ethnographers to get their feet wet before actually starting a major ethnography project. It is in that sense I use this term; this study is an attempt to begin to know what to study and how. Thus, this study is a study to foreshadow a similar study on the horizon, yet out of the domain of this dissertation.

for this study. The rest of this chapter will be laid out as follows: a rationale for the selection of triangles as the object of study the choice of the graphics program as the way to gain access to triangles, an outline of the constraints of the world of students and teachers, characterization of the participants, the field setting, and the sources of data. Finally, I will use the data to tell four "tales of the field", one "realistic" tale and three evocative tales.

For this study, I employed the method of creating a small, staged instantiation of a postmodern educational environment as I have described it in the first section of this work, an instantiation that, by necessity, was constrained in several important ways. Constraints include time with students, number of objects of study, power of the student, size of the pluralized information base, number of discourses available, interactions between students and representatives, number of methods available, types of media available, and ability of the student to control the presentation. The exact nature of these constraints was an important part of this study and is largely detailed later.

In this section I document some of the more global constraints. First is the constraint of student objectification and selection of the object of study, this restriction of student control goes contrary to the argumentation that has been previously articulated. This was necessary because in order to get any sizable amount of data, the students and the representatives needed to be working on the same object of study. Thus I selected a part of the world and a

single object of study that both the students and the representatives could engage with. The object of study that I selected was triangles[339]. This object of study was selected for a number of reasons, probably foremost was my background in teaching mathematics. It was an area in which I felt comfortable and an area for which I could envision the creation of a number of different discourses.

The specific selection of a geometric construct was based on its historical significance in the debate and theories of the Truth, Archetypal Ideas, or Ideal Forms. The connection between geometry and Truth can be traced at least back to Plato, who "considered geometry and number as the most reduced and essential, and therefore the ideal, philosophical language."[340] In fact, "[g]eometry was the language recommended by Plato as the clearest model by which to describe this metaphysical realm."[341] This notion became powerfully positioned in Western culture later with the work of Descartes, who saw the world as being undergirded by geometry. Descartes theorized that geometry would provide us with a "universal method whereby all human problems, whether science, law, or politics, could be worked out

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[339]Triangles are a part of the world or objects of study that I have called a cultural artifacts. They are not an essentialized True form as it was in the past, however; it is an artifact that we use occasionally in our lives.

[340]Robert Lawlor, *Sacred Geometry: Philosophy and Practice* (London: Thames and Hudson, 1982), p. 6.

[341]Lawlor, p. 9

rationally, systematically, by logical computation."[342] Geometry is and has been one of the foundational touchstones of the modern rational discourse. The triangle may be at the center or the most holy of holies for the enlightened scientist. The triangle and its connection to Euclid's fifth postulate[343] was arguably the the cornerstone of modern geometry. This cornerstone was destabilized by the advent of non-Euclidean geometry that rejects the fifth postulate. It may be argued that this was the initial rumblings of the postmodern era and in fact this occurrence has been used to support alternative paradigm research.[344] Thus the selection of triangles as the object of study is a historically significant one for the struggle against the Truth as well as a practical one for this study.

The method with which I have chosen to engage students is the software package entitled MacDraft. MacDraft is a simple drafting graphics program that enables the user to create lines, curves, free drawings, circles, ovals and polygons in a two-dimensional drawing. It also allows for the easy manipulation and

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[342]Philip J. Davis & Reuben Hersh, *Descartes Dream: The World According to Mathematics* (San Diego: Harcourt Brace Jovanovich, 1986), p. 7.

[343]The most common high geometry textbook version of the fifth postulate is: *Through a given point not on a given line can be drawn only one line parallel to the given line.* However, some other alternatives relevant to this argument are: 1) *There exists at least one triangle having the sum of its three angles equal to two right angles*, or 2) *there exist a pair of similar non-congruent triangles.* Taken from Howard W. Eves, *An Introduction to the History of Mathematics* (New York: Saunders College Publishing, 1982), p. 371.

[344] see Yvonna S. Lincoln & Egon G. Guba, *Naturalistic Inquiry* (Beverly Hill, CA: Sage, 1985), pp. 33-34.

duplication of the size, shape, position, and other attributes of these figures. Furthermore, it allows the dynamic labeling of side length, angle, and area measurements. In the exploration of the triangle, it can create triangles, move individual vertices, move individual sides, rotate triangles, display side lengths, display angle measurements, display area measurements, copy triangles, move triangles, and fill triangles. It is arguably one of the most flexible common graphics programs available in the handling of geometric figures. Ideally there should have been many triangular parts of the "world" that students could study; however, once again, to obtain a large enough pool of data I had to limit my selection to one method of exploring the world. I chose this software program as a triangle part of the "world" in large part because of its flexibility. I also wanted to use a computerized triangle world because of the future ability to use artificial intelligence techniques to connect the representatives' information base with the students' study activities. This is only possible if the computer can code the activities as it does in this program.[345] These are the initial major constraints that were put on the postmodern educational environment that will provide a means to begin to address the issues and obstacles in its further development.

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[345]This use of a computer program, like MacDraft, does in someway constrain the student in thinking about triangles in a certain ways. For instance, the 2-dimensional computer screen severely constrains students exploration of traingle relationships in 3 dimensions.

8D. Constraints on the Postmodern Instantiation

In addition to the above, there are other constraints that had to be put on the inquiry scenario being described in this chapter. The following is an accounting of these constraints and why they were made. The constraints included limiting the time with students, number of objects of study, size of the pluralized information base, number of discourses available, number of methods available, types of media available, types of interactions between students and representatives, power of the student, and the ability of the student to control the presentation.

The time limit was one 40-minute session with computers, students, and PSTs. This was not ideal, for it is hard for the students to understand their "assignment," get comfortable with the technology[346], and to develop a rapport with the PSTs. It is also not ideal because efficiency is probably not a characteristic of a postmodern education. It will probably be characterized by the prolonged engagement over a nonsequential time period, because of the exploratory nature of this environment. This is the antithesis of the 40-minute period, where time dictates interest instead of interest dictating time. However, to conduct a study I had to go where the students were and that was the middle school with its time frame.

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[346]This includes both the computers and the video cameras that were there to record the event.

The postmodern education is characterized by being world centered, not subject centered. Ideally I could have allowed the student to study any object within the world. However, within this context, this is an impossibility. In order to implement this study I had to narrow the possible parts of the world down to one. This was done so that my PSTs could develop a large enough pluralized base of codified knowledge. Thus I had to limit the objects of study to the one: triangles. This was a large imposition on the student, and I consider it to be an unfortunate occurrence - one that given the time frame and the number of PSTs to develop instructional activities was necessary, however.

The size of the pluralized information base was largely constrained by the number of PSTs that were available to develop it. The size was extremely inadequate to be called a postmodern educational environment; however, it did seem to be enough for the purpose of these initial gropings. The number and differentiation of discourses were also inadequate in the large sense, but met the needs of this prior ethnography. There was a problem with the presentation of the discourses and their differentiation. When a student asked a PST for help or for their particular activities, they had no idea what they were getting into. The only way the student could tell them apart was by the physical description of the PST, not the discourse itself. In some of the later field experiences the PSTs and I played with trying to create "advertisements" on the computer, or before they started,

the PSTs would briefly describe their activities. Another problem with the information base was the relatively little interaction between the discourses as it was discussed earlier. Typically, once students began an activity, they would either see it through to the end or simply stop because of lack of interest. They would seldom stop to explore an interesting alternative. This was largely due to the fact that the PSTs first saw each other's "discourse" as they were being presented to the students. To have an environment that has been envisioned within this dissertation, the discourse representatives must explore "rival" discourses to determine, to some extent, where to intervene within those discourses.

The information base was also limited to 3 to 8 different types of instructional methods to choose from. These were also the number of discourses, for no PST developed more that one instructional method for the triangle discourse. Thus the opportunity to explore one discourse in multiple ways was non-existent. The limitation of the media available to the student was even more severe, for the students had only the computer and the paper worksheets and diagrams that the PSTs had developed. These limitations were also rooted in problems with limited time, production skills, resources, and capability to display other media. These are not important problems at this level of analysis; however, in the future, they will need to be addressed. Within these contexts there was the obvious bias of the PSTs to use the instructional methods that were traditional and were taught within

their methods classes. The same is true of the media. They used the easiest and most familiar media that they could produce, the worksheet.

The interaction between students and representatives was limited to the use of face-to-face verbal interactions. While making the data analysis more direct, it did once again limit the pluralistic flavor of the postmodern environment. I did consider the use of text interaction over a LAN or verbal interactions over a phone system. The reasons that these were not used were logistically it was very difficult; technically, it was more sophisticated and costly; and it mandated the removal of the traditional face-to-face student/teacher interaction. The inclusion of traditional face-to-face student/teacher interaction was important because I did not wish to imply that this interaction was no longer needed within a postmodern educational environment. This is a common reaction to proposals that introduce technology into education. This reaction does have merit and needs always to be considered; however, it is not the case that the environment I am suggesting here implies the removal of this important part of education.

After saying that, there were also some severe limitations that were created by the use of the traditional face-to-face student/teacher interaction. These limitation were associated with the established power relationships between the student and the teacher. For anywhere from 7 to 9 years these students have been

under the technologies of control that our modern educational system has established. Thus, when the students are put into the context of a traditional face-to-face student/teacher interaction, no matter what they are told, they will feel those technologies at work. Even though they were told that they can just stop an interaction between a PST and themselves, they rarely did. Furthermore, just the PST sitting behind them also engaged these technologies of control, where the students felt obligated to ask questions or had concerns that the PST was really trying to assess the student's intelligence through observation. Thus these traditional face-to-face student/teacher interactions in some meaningful way reduced or eliminated the self creation space that this environment was attempting to provide the student, - a space that might have been afforded to them by the other interactional techniques of phone or text.

In sum, the power of the student was severely limited in comparison to the idealistic vision created in the scenario of a postmodern education described earlier. The students were limited in their selections of objects of study, discourse, instructional activities, and media. Also limited was their ability to change objects of study, pick the time and duration that they wished to study it, control a discourse's presentation, and find a space outside of the classroom's technologies of control. However, in comparison to the current classroom environment on all of the previous counts, this instantiation of a postmodern educational

environment makes significant steps towards the postmodern concepts that have been articulated within this dissertation.

8E. Participants

The students are 18 middle school students from an upper-middle class suburban school. The participants were selected by the Computer Coordinator at the site, through purposive and convenience sampling.[347] The Coordinator was asked to choose students who had high verbal and interactional skills, success in school, above average intelligence, and experience with computers. They also had to be available during the 40- minute study hall period just before or after lunch and willing to participate. The decision to select these types of students was based on a number of factors. The first criterion of high verbal and interactional skills was important because the students needed to be able to make wished-for connections with available representatives in this staged environment. The only practical way to make these connections was via verbal interactions.[348] The criteria of success in school and above average intelligence were important because students needed to have the confidence to work on their own if they wished and ask questions about a subject area. This was not seen as a liability in the study because learning gains were not

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[347]M.Q. Patton, *Qualtitative Evaluation Methods* (Beverly Hills: Sage, 1980). ???

[348]I have explained why it was the only practical way in the Constraints Section.

measured. The final criterion is experience with the Macintosh and using the mouse. This was necessary because they would not have a long time to learn the program, the computer, and the mouse.

8F. Situation

The students were asked to work on a computer program involving the object of study: triangles. The program selected was the general purpose drafting program entitled *MacDraft*. The students had an initial exposure to the program of 40 minutes where I explained to them what I was studying and what I would like them to do. Then they were left to explore the program individually or in groups. The next day students were put on computers and had available to them several PSTs who were enrolled in my undergraduate "Computers in Education" course. The PSTs were completing an optional class assignment[349] in which they were required to learn MacDraft and then independently create several small instructional activities on separate triangle discourses, that they would make available to the students.

The students and the PSTs were put in a number of different situations; the first situation was a combination of 6 students on 6 computers with 7 PSTs. The second situation was the combination of 2 or 3 students on one computer and 2 or 3 PSTs. The final was one student on one computer and 2 or 3 PSTs. The students were

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[349]See appendix #1

given approximately 40 minutes to "learn as much about triangles as they can" in the period. The students were given no mandatory instructional approach; however they had access to the PSTs who were available. The PSTs were instructed not to intervene into the students' activities, but rather to be available to the students on their request--in the same manner as the spellchecker was to the writer.

8G. Sources of Data

The source of data collected is observational data on students' questioning activities, spontaneous interviews with PSTs, and a written report turned in by the PSTs as part of their assignment. The data were collected through the use of video cameras, audio tapes, a computer screen recording program, PSTs' written reports, and observational data collected by the researcher on site.

8H. The Realistic Tale

As I begin to think of ways in which to tell the readers of this work what happened in the field, I am struck by the plurality of the experience. I am frustrated at grasping this plurality of the data within my project of trying to help us in our attempts to examine, create, and become postmodern educators. It means attempting to tell a "tale" that goes beyond the description of the there and then, and instead tries to inform the "enactment" of the yet-to-be within a frame of the academic discourse I find myself

very much engulfed in. I find myself resonating to the efforts of people like VanMaanen who have articulated multiple ways of telling or creating ways for the telling of inquiry tales. I will report the data that were collected in three different tales told through the use of two different types of tales: a realist tale[350] and an evocative tale. In this first tale, I will lay out the data with a traditional "objective" posture. This realist tale attempts to give you, the reader, a full perspective of the study, its trends and its outliers. The second, a set of evocative tales, will attempt to separate the modern stories and postmodern stories that can be told via the data.

VanMaanen characterizes the realist tale as the traditional way of writing an ethnography that is relatively "straight forward, unproblematic descriptive or interpretive task based on an assumed Doctrine of Immaculate Perception."[351] The realist tale tends to be conducted by the humble, dispassionate fieldworker who uses their experiential authority to write the tale of the found world with a scientific, objective, third-person voice. This characterization frames the realist tale as boldly modern in its form, method and product, a framing that is lacking in the plurality, the tension, the reflexivity, the multi-voicedness, and incommensurability that are so much a part of the emerging crisis in the social sciences. While VanMaanen problematizes the

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[350]John VanMaanen, *Tales of the Field: On Writing Ethnography* (Chicago: The University of Chicago Press, 1988).

[351]Ibid, p. 73

realistic tale, he notes that these types of tales have created "powerful work which remains, decades later, engaging, vivid, stimulating, and somehow still true."[352] The realist tale is especially problematic within a postmodern study invested in undermining the foundationalist assumptions that foster the realist tale. However I, like VanMaanen, find the realist tale a useful tool to work with the data of this study. The realistic tale will be useful with this current study because it has the characteristic of being able to create a "common denominator" of experience of the study. This common denominator characteristic allows me the ability to give you a full, broad, average look at a way the data can be used to "normalize" an inquiry situation. As in any measure of the common, interesting exotic variations are often overlooked because of the difficulties they pose to the creation of the tale of the "common", the "normal." The realist tale is also limited in the ability to use data to think things "as they might be" and is relegated to describing things "as they are." For these two reasons I will also write what I have called an evocative tale; however, first here is the realistic tale.

The realistic tale will deal with 3 types of student-initiated connections that include: I) student-to-student connections, II) student-to-PST connection, and III) other connections. This tale will also include PST-initiated contacts and PST overall reactions.

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[352]Ibid, p. 54

The tone of the study for the students and the PSTs was one of nervous apprehension. This was most evident, in the beginning of many sessions, by long periods of silence and almost no interactions between anybody. In some cases the tension worked itself out quickly and in others it was not even an issue. This seemed perhaps an issue of age, gender, and grouping. There was little tension with three 6th grade boys working on one computer and the most tension with a couple of 8th grade girls working by themselves. I would not want to generalize because of lack of full representation of all the subgroups. There where a few cases were it was necessary to step in as the coordinator of the project to attempt to alleviate the tension. In four instances I tried to ease the tension by joking, restating that the PSTs were available (e.g. "think about asking for help from someone else"), or asking general questions (e.g. "Do you have any interest in talking to these folks (PST)?").

In the extreme situation for one student I "practically pulled his teeth," as one PST said, and required him to ask questions. These directions to interact with the PSTs came in the form of requiring the students to ask a certain number of questions before the time was up. This seemed to work in all but one situation, which will be exemplified in the story of the modern student.

This tension was not unexpected, and I attributed it mostly to several aspects of the study: first, the novel student/teacher relationship in this postmodern environment, in which the student

and the PST had no experience; second, the lack of previous relationship between the students and the PSTs or sufficient time to build one; third, the lack of software expertise on the students' part, as well as to some extent on the PSTs' part. These observations were triangulated by the PST informal interview and written reactions to the study.

They observed the tension:

> In my opinion, the students felt slightly intimidated.
>
> It was high pressure for all of us.

They explained the tension:

> I would be really intimidated with [it] all and very nervous if somebody were sitting behind me.
>
> I would have not liked people hawking over me,.. .

They made suggestions to improve the educational event:

> Something I would have done differently would have been to explain the MacDraft functions to the students before they began to experiment on their own.
>
> I think that if they had had more information and examples on what they were supposed to be doing that they would have been more comfortable in asking questions.
>
> I think if they were more familiar with us they would do better.

This initial tension was alleviated in the extreme case within the first 15 minutes of the activity, except in the noted case. Once the tension was alleviated, the students began to freely make many different connections with the instructional and informational resources around them.

I. Student-Initiated Connections

The student-initiated connections were the primary focus of this prior ethnography. Although they were not the only types of connections, they were the most common. There were 3 catagories of student-initiated connections, they are: a) Student-to-Student Connections, b) Student-to-PST Connections, c) Other Connections.

a. Student-to-Student Connections

The student-initiated contact that was most common was the student-to-student contact (47 times), all of which involved a student looking at another's screen. This seemed to be initiated for several reasons, including student boredom, perceived excitement at another computer, and frustration with the current situation. On occasion these connections were more than just looking at a screen; they were accompanied by students' asking one another straight forward questions (e.g. "Where is zoom?" or "What are you doing?" happened 6 times).

b. Student-to-PST Connections

The student-to-PST connections are connections were the student makes contact directly with the PST sitting behind them.

There were two types of student-to-PST connections, they are i) Technical Connections and ii) Instructional Connections.

i. Technical Connections

Technical connections are the first set of student-to-PST connections and were the most common. The technical connections have to do with the connections related to the technical aspects of the computer. There were several types of these connection, the first type of technical connection include connections in the forms of questions for technical confirmation (2 times). These questions were characterized by the student looking to the PST for confirmation or reassurance for a technical action that the student is about to execute. An example of this is:

> "This makes circles and this makes squares and this makes the triangle;" Then looks to the PST and the PST nods.

The next type of technical connection include connections in the forms of questions for technical explanations (3 times). These questions were characterized by the student requesting an explanation for a computer phenomenon that occurred while working with the computer, such as,

> "Why did it do that?"
>
> "What is this?" then student points with mouse.

The next set of connections is the students' request for technical help (10 times). These connections are questions or statements that are prompted when students come into contact with something unexpected and unexplainable during their activity or exploration. The students' questions or statements are ill-formed and general in nature; they are rather confused and are looking to the PST to clarify their situation. Examples include:

"How do you get out of here?"

"Where did it go?"

"Where is my picture in this?"

"I can't even draw anything."

The final set of technical connections is what I have labeled technical how-to types of questions (25 times). These questions are characterized by their direct and specific request for technical information about how to do something that the students know they should be able to do. The PSTs are utilized for brief explanations of the computer's technical functionality. Examples include:

"How do I get rid of this?"

"How do you fill?"

"How do I print?"

"How do I get the stuff out of there?"

"How do you draw a line?"

"How do you fill this triangle in?"

ii. Instructional Connections

The next set of connections were instructional in their origin. They had to do directly with the PSTs' designed instructional activities. There were 18 incidences of these types of connections. The most common type of instructional connections was open ended questions (11 times) requesting to see the activities the PSTs had designed. These include questions such as

"What should I do now?"

"What else do you know?"

"All right, now what?"

"What do you want me to do now?"

"What else can I do?

Some had a tone of eagerness (e.g. "What a good idea?") while others had a tone of irritation or boredom (e.g. "All right, now what?"). I could not, however, make any general statements about their nature.

There were several incidences of other types of instructional connections. There were three connections to confirm the success of the instructional activity (ie. "Is the answer six?"), two connections to request more information about the instructional activity (ie. "How can you do that without knowing the base and

height?"), and one connection asking a question on the concept of a triangle (ie. "Can a triangle be like this?")

c. Other Connections

The final set of student-initiated connections was a collection of outliers in my emerging category system. The first type was covert student connections (3 incidences) where the student covertly attended to PST instructional activities or directions while they were directed to another student. There was 2 connections that I categorized as meta-questions. These were questions that asked about the nature of the study (i.e., from a PST notebook, "He [a student] asked me what we were doing"). There was also an incidence where a student initiated a connection with a PST by joking around, giving a soft elbow to the PST's arm. The final type of student initiated connection was hard to even characterize as a connection at all. These were the non-verbal connections. There were four incidences in which I categorized as non-verbal "help me" connections where the student would simply look at the a PST until the PST initiated a connection[353]. This is hard to characterize as a connection because, in some ways, it is not a connection but more of an opening for intervention. But in a real sense, it was a connection because there was no doubt in my mind or that of the PST that she wanted to have someone intervene and tell her what to do. This is a perplexing category that needs more thought.

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[353]The non-verbal connection does not fit well into the postmodern educational practices and framework I have developed.

II. PST-Initiated Connections

The study also revealed the PSTs' struggles to fit in the postmodern educational role as described in this study. This was illustrated by the fact that the PSTs initiated connections, despite the instructions to the contrary. These connections fit well into the category structure of the student-initiated connections. There were six incidences of technical connections and four incidences of instructional connections. Other types of connections emerged that were unique to the PST-initiated connections. These connections were characterized by the PST not only verbally intervening, but physically intervening by hitting keys to make the computer do something (2 times), making the student stop and telling them what to do (1 time), or taking control of the computer and demonstrating how the student should do something (9 times). All of these interventions were initiated by the PST, sometimes with a token solicitation to the student (e.g. PST "Can I show you how to rotate?"; student "yea"; PST takes the mouse) and sometimes initiated with no regard for the student at all (ie. PST reaches out and grasps the mouse while saying, "Can I see it a minute?" The student complies by pulling his hand away from the mouse.).

The outlier in this set of connections was when a PST tapped a student on the shoulder and said, "Nice job". This did not fit the other instances within this set because the others were trying to get the student to do it the PST's way, as opposed to this

connection which was to simply display a positive regard for the actions the student had exhibited. At one level this is a good interaction for the student and the PST and, therefore, it should not be restricted in the postmodern framework as has been previously suggested. However, this unsolicited positive feedback, as critics of behaviorism would agree, is very manipulative and controlling. This issue will be explored further in the final section of this chapter.

III. PST Overall Reactions

The PSTs for their part saw the study to be a mostly positive experience. Their comments indicated that they saw the experience as beneficial to both themselves and the students.

> In conclusion, I felt it was a very good experience for me as well as the students.
>
> Finally, I feel this was more beneficial to me that doing the Unit Plan because I got to interact with students
>
> I really enjoyed participating in the research project.
>
> I think this type of learning could be very beneficial because it teaches students how to experiment and learn on their own.
>
> Overall, I believe this project was a big success.

I believe that these remarks have to be tempered with the knowledge that these were students doing assignments that I

would be grading. However, even with this knowledge I was encouraged by their comments. With respect to the students, this was not the feeling of the entire group of PSTs. One commented that:

> I really do not feel the students, especially one student, learned very much about area, or triangles, using this approach.

The PSTs did have some frustrations with this type of educational environment. A large number of them made comments in the written documentation that they did not like the inability to intervene into the students' work. . Most comments sounded like these:

> The thing I found most frustrating was the fact that I could not intervene unless the students asked for help. It was hard for me not to jump in and help a student to show them an easier way or the "right" way to make a tessellation.
>
> I wanted to say something so bad.
>
> I hated just sitting there watching them play around, when I had so many things they could have experimented with if they just would have asked me.

However, there were a couple of PSTs that, after commenting on their frustration, also observed advantages in their work with the students. One PST noted:

> Not stepping in was the thing to do because she seemed to feel good that she figured it out herself and she's more likely to remember it.

The PSTs also showed their engagement in the study by making a number of suggestions that would bear further consideration. The suggestion to reduce the nervous tension in the room has already been mentioned, but the following suggestions are also interesting:

> I think it would work best if they were just more familiar with us.
>
> I think if a teacher wants to use this type of method, she/he must do so from the beginning of the year.
>
> I think teachers should present options and ideas to their students and allow them to experiment with the options or to create their own ideas, but I do not think they should sit there and observe until a child approaches them.
>
> I believe that it would be beneficial to require the OSU participants to have their projects completed one week prior to the field activity [and] to provide copies of their projects with the other OSU participants and with the student-subjects of the lab.
>
> I also believe it would be interesting to have one or two PSTs working on the computer while the students are working.
>
> Have some interesting things on the screen when they come in.

> Maybe get them [students] back watching [behind the PSTs working on the computers], watching for 5-10 minutes.
>
> The students might have felt more at ease if they had more experience in working with MacDraft.

These suggestions will be valuable to consider in the next formative stages of the creation of a postmodern educational environment. I will conclude this realist tale of the study with a quote from one of the PST reports. This quote shows me a remarkably postmodern perspective from a PST educated in very modern educational practices.

> I would not want to tell the students when to use each of the options because I would not want the students to think there is only one correct way.

I would not want to suggest that this study forged this type of insight, but, rather, I hold this quote up to show the possibility of these postmodern ideals to effect changes in educational practices.

8I. The Evocative Tales

The evocative tales are a derivative of what VanMaanen calls an impressionistic tale. Impressionistic tales, inspired by impressionistic art, are tales told in "highly personalized perspective." These tales are "tightly focused, vibrant, exact, but necessarily imaginative rendering of fieldwork" that are written

"to evoke an open, participatory sense."[354] These tales focus on the unique, with the rationale that common denominator tales do not make good stories.[355] The reason that I prefer evocative tales, over the impressionistic tale, is that, although I wish these tales to be "highly personal" to the theory of this study, "focused," "open," and "unique," I would like to further use these tales to evoke the possibility of change. As represented in the title of my dissertation, "Looking Forward to a Postmodern Education," this work is meant to be used to look toward the possibility of a postmodern education. An evocative tale represents this desire to evoke action and elicits an impression of the educational situation which I am presenting. It is also foregrounds the fact that these tales are not end points but rather starting points, to show that for this study my "analysis is not finished, only over."[356]

These evocative tales will be formed by incorporating the story-telling method.[357] I have created three fictitious students (Jeff, Mike and Julie) and one fictitious preservice teacher (Chris). They are not real people, although I did have particular people in mind as I wrote the stories. I use this method of data reporting because it fits well within the speculative goals of this inquiry. It

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[354]VanMaanen, pp. 101-109

[355]Ibid, p. 105

[356]Ibid, p. 120

[357]T. Denny, *Storytelling and Educational Understanding*. Paper presented at meeting of the International Reading Association, Houston, Texas, May 1978 (ERIC Document Reproduction Service No. 170 314). Quoted by Robert Bogdan & Sari Knopp Biklen, *Qualitative Research for Education* (Boston: Allyn and Bacon Inc., 1982), p. 181.

provides a vehicle to partition the postmodern and the modern happenings within this data set, and in doing so it evocatively demonstrates both the possibility of a postmodern educational environment and the backdrop of the traditional modern educational environment. These stories are vehicles to represent the data that was collected in the classroom and in later self reports. Almost every interaction between preservice teacher and student in the stories was derived from the data collected. However, the stories by no means convey the experience of any one student. Rather they become a method of compiling selected experiences of many of the students in the study. The selection of these experiences is based on the criteria that was previously set forth in this dissertation. The specific criterion for each story will be taken up later. Although the individual incidences of these stories are based within the data collected, their order, sequencing and amount of these incidences that fit the criterion has very little basis within the data of any one individual or group of students.

The Postmodern Students.

The first story will be of Jeff and Mike. They are the compilation of the postmodern educational interactions of most of the students in the study. These interactions flesh out and exemplify the criterion of student-initiated interactions. Once again Jeff and Mike are fictitious and are a collection of these types of interactions.

Jeff and Mike enter the old classroom now filled with desks, file cabinets, and other extra teaching equipment; they see in the middle of the classroom four computers on four student desks all wired together. They are both assigned computer #1 and Jeff sits down at the desk chair, while Mike pulls up a folding chair. There are students at the other computers; some students have a computer by themselves, while others must share. They settle in but feel a little uneasy with the two preservice teachers sitting behind them. The preservice teachers, they are told, could answer any of their questions and had created some activities for them. Jeff and Mike are asked to "play with triangles" on a program that they had used the day before. The program seemed pretty "cool" but they really don't know how to work it very well and don't know what the teacher means by "play with triangles."

Mike and Jeff argue and then decide that Mike would get to control the mouse first and Jeff would get the keyboard. They are quite animated in their play, although quite independent. After a while they switch input devices and Jeff starts to use the mouse. Mike becomes bored with watching Jeff. His attention drifts to the computer next to him. He notices that his neighbor is using a function that they had not yet discovered. He asks her, "Where is the zoom?"

She shows him and he quickly tells Jeff to do the "zoom" function. They are occupied with the function for a while, but suddenly the computer does not respond to the mouse and they become confused with what is happening. After a quick debate over who should ask the preservice teacher, Jeff turned to the one closest to him and asks him, "How do you get out of this?" pointing to the screen.

The preservice teacher tells them how to regain the control of the computer and they are off and running again.

Soon after the problem is solved, Mike draws a triangle.

Looking over the screen Jeff pronounces,"That's not a triangle."

Mike replies,"Yes, it is," and looks to the preservice teacher sitting behind him. The preservice teacher nods in affirmation.

Mike turns to Jeff and says, "See."

He then tries to fill the triangle with a pattern, but after many attempts the efforts are fruitless. They look around to the other computers next to them but this yields nothing. Finally they turn to the preservice teacher that is sitting behind them and ask "How do you fill this triangle?" The preservice teacher quickly explains the process and they start filling all the triangles on the screen. Mike exclaims, "Wow, neat!"

After about 15 minutes of free play with the computer the boys become a little bored with their play and Mike looks over to the neighbor who is working with a preservice teacher. He takes a long look at the neighbor's screen, intently listens in on their conversation, and steals a glance at the preservice teacher's papers. After the preservice teacher sits back Mike asks his neighbor, "What are you doing?" and leans over to look at the screen.

His neighbor replies, "I don't know."

A few minutes of idle activity goes by and Jeff finally yields to the subtle pressure of the preservice teachers behind him. He asks one of them, "What's a good

idea?" The preservice teacher shows them the activities that are available and Jeff and Mike look over them selectively and chose one that looks interesting. The preservice teacher explains the activity and they begin to work on it diligently. After quickly working through the activity, Jeff asks, "What else can I do?" The preservice teacher shows them another activity and in this one the preservice teacher poses a problem for them to solve. Working on it for a couple of minutes they become frustrated with it and ask for some additional help. The preservice teacher gives them a clue. They think about it awhile longer, and then timidly ask the preservice teacher if the answer was six. The preservice teacher tells them yes indeed it is, and they respond with a "Wow!"

Mike and Jeff continue to play with the triangles that they have created. Gesturing to the screen Jeff asks the preservice teacher, "Can a triangle be like this?" and makes a hand gesture as if he is manipulating the triangle in his hands.

"Or like this", with another set of hand gestures.

The preservice teacher says, "Yes."

Pointing to the screen Jeff asks "Is this one?"

Clarifying himself, he asks, "Is this black part one?" The preservice teacher answers, "Yes it is," and continues with a definition of a triangle.

Shortly after the bell rings for lunch, Jeff and Mike stand up, thank the preservice teacher and leave. It appears that they had an enjoyable 40 minutes.

The Modern Student and Teacher

The second two stories will involve a fictitious student (Julie) and a fictitious preservice teacher (Chris). They are a collection of student and preservice teacher data that goes against the notions of a postmodern education as articulated here. That is, they did not accept the postmodern role that the study intended, a position where the student initiates contact and the teacher is the resource waiting to be utilized by the student. This circumstance, I would consider not to be surprising, because a 40-minute exposure to a postmodern educational simulation cannot instantaneously reverse the student/teacher relationship that has been developed for years within a modern condition. These two stories illustrate the difficulties that this conception of a postmodern education must effectively deal with. Once again these two case studies are a compilation of separate pieces of data put into the two perspectives of a student and a teacher.

The Modern Student:

> Julie[358] sits at computer #3 and puts her hands in her lap. She feels as if she is under a microscope with the 3 preservice teachers sitting behind her. She also doesn't have a clue as to what the teacher means by "Play with Triangles." She begins to play with the computer, but appears to be bored and aimlessly doodles on the screen. This goes on for about 15

[358] Julie was chosen as the pseudonym for the modern student because she represents a particular female student within the study that epitomizes this attitude. The fact that the modern student is a female and the postmodern student is the male, and also valorized, is disconcerting to me, although, this may be a factor of the age of the students or with the gender issues with the topic of triangles.

minutes. She occasionally looks at other screens, but like the other 3 students, acts on or says nothing. She appears to be too intimidated or too shy to ask any questions, even though she has been told that that is why the preservice teachers are there. The time drags on.

Finally breaking the silence, the teacher tells all the students that they must ask a question. Julie continues to play by herself and finally looks to one of the preservice teachers. She says nothing, simply looks wantingly. After a few seconds the preservice teacher can bear the gaze no more and asks Julie if she would like to look at the activities that he has created. Julie, saying nothing, simply nods. The preservice teacher tells Julie about the activities that have been developed. Julie grabs one out of the preservice teacher's hand. She turns to the computer and begins work on the activity for a while, until she apparently becomes stuck with a technical problem with the program. The preservice teachers are almost bouncing out of their seats ready to help her, but they refrain until asked. Julie struggles for a long while and then gives up, but never asks for help. The preservice teachers slouch back into their seats. Julie repeats this non-verbal request for activities to the other 2 preservice teachers. The result is pretty much the same. During the last 5 minutes, Julie stares at the clock, at the screen, and at the other students' screens. She does little else. The bell finally rings, relieving all involved from the almost unbearable tension. Julie says nothing and quickly gets up and leaves the room. Talking with the preservice teachers, we all agree that Julie got little, if anything, out of the 40 minutes.

The following is a compilation of the preservice teachers' perspective on this study.

<u>The Modern Teacher:</u>

Chris and two fellow preservice teachers sit down behind an 8th grade student working at the computer. Chris has prepared 5 activities to explore triangles through tessellations.[359] Chris has worked hard to understand the program and prepare her activities. She is confident that the student will find them useful. As the student begins to work with the computer, Chris intently looks at what the student is doing. She does this for about 10 minutes and begins to feel uneasy about the situation. As every minute ticks by without the student asking a question, her anxiety heightens and the tension increases. It appears to Chris that the students may have been "a little intimidated by having three teachers just staring at what they were doing." Chris becomes frustrated because she can see the student struggling and wants to do something to help him. This frustration builds as Chris sees the student encounter so many "little" mechanical problems that could easily be explained and instances where the student could be shown an easier way or the "right" way to make a tessellation. She finally gives in to the pressure of the unbearable silence and frustration between the conflicting parameters of this research activity and previous field experiences.

Chris starts with subtle interjections like tapping the student on the shoulder and saying, "Nice job," after the student successfully completes a task. Shortly after that Chris sees the student becoming bored and asks him, "Can I show you how to rotate?"

The student replies, "yea."

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[359]Tessellations are patterns that certain geometric figures create that fill 2 dimensional space. The most common tessellations are floor tiles and the shapes that create a quilt. The triangle has the property, that triangles of any one shape and size can fit together to fill two dimensional space similar to a tile.

Chris then takes the mouse and rotates a few objects. After this she continues to give unsolicited technical information when she notices the student exploring something different on the screen. They include the explanation,"see these points, when you see those points you can do anything with it," while she points to the screen. Soon after, the student opens a pulldown menu about letters. Once again Chris quickly sits forward and tells the student what that menu does and when it does it.

The student begins to play with the function and Chris perceives the student making a mistake. She jumps up and says, "Oh, oh can you go over to file and under there is an undo. . . " She goes on to explain to the student how to fix the perceived mistake.

Chris finally gets the student to ask her about her activities. She shows them one of her activities on triangles; basically the student just sits and looks at her. Anytime the student sees something tough, he says no way. The only thing that Chris can get them to look at is the "fun stuff."

Toward the end of the period, Chris becomes disgruntled with the lack of student engagement with the activities. In a last ditch effort, Chris says to the student, "Let me see," and takes the mouse. The student quickly pulls his hand away. Chris demonstrates a few things in the lesson to the student just before the bell rings for the class.

Chris laments later:

> I wanted to help them; it was very frustrating for me to just sit back and not say a word. There were so many times I wanted to help the students on a "little" mechanical problem they had. The student seemed disinterested from the very beginning, and I think this is why I tried to

> takeover and show him how much fun it could be. I found this especially frustrating because I had several ideas that I thought would spark their interest. I couldn't tell the students about my ideas since I had to wait for them to ask for assistance, thus I really did not get to the good stuff I wanted them to play around with. In the extreme case, one student had absolutely no concept of what he even wanted to do. I mean, he was just too lost to even ask a question. How do you handle those types of students?

8J. Reflection on Data Analysis

The process of data analysis was conducted not to document what this educational environment was, but rather to document the evocative happenings when this theory is taken to the world of students and teachers. To accomplish this I had to demonstrate that indeed, an instantiation of a postmodern educational environment could be created, by developing one in such a way that postmodern educational "things" would happen. A description of this instantiation with reflections on the original theory and identified constraints will aid the exploration of "How to create a postmodern environment?" The description through merging categories of these postmodern educational "things" as well as modern "things" that occurred within this environment helps envision the postmodern possibilities as well as examining the extent that any such environment remains within the trappings of the modern school in which these students and teachers find themselves. Finally this description of the students'

and teachers' difficulties and successes within this postmodern educational environment are invaluable when we relate them, once again, back to the theory and constraints of this staged instantiation.

The realist tale serves the purpose of laying out the initial reactions, common types of connections, unique types of connections, and overall reactions to this educational environment. This tale takes a traditional "god's eye view" of this environment and provides the reader with an "objective" tale of what went on in the study. The realist tale does provide the readers with some of the fullness of experience; however, it does not provide them with an adequate experience for the evocative goals of this dissertation.

The second set of tales, the "true fiction" tales, provide the reader with an interesting delineation of the interactions between the PSTs and the students on the ground of the postmodern and modern educational practices. The story of the postmodern student weaves a tale from collected data that would give one a sense that the body of theory that was derived in the first part of this dissertation could successfully be taken to the world of students and teachers. Furthermore, it demonstrated that a staged postmodern educational environment could be created, that students could and would engage in such an environment, that there were some educationally interesting and significant things going on, and that data could be collected to inform future efforts.

The tales of the modern student and teacher explore the ways in which these particular students and PST are, even when explicitly asked not to be, trapped in their modern heritages. By using the data categories that went against the theorized interactions of a postmodern environment I was able to create a story of the struggles, frustration, and confusion that a postmodern environment evoked in students and the PSTs that were implicated within a strongly established set of modern educational practices.

This concludes the empirical inquiry section of this dissertation. An exploration of future studies will be conducted in the concluding chapter. This inquiry has operationalized the sometimes obtuse and convoluted language of the theory developed in the previous chapters. In this study it was shown that a postmodern educational environment could be constructed, that interesting data for a postmodern perspective could be gathered, and that there could be created an image, out of that data, of what a postmodern educational would be like. I would like to reiterate my disclaimer that the tales of the postmodern student, modern student and the modern teacher where fictional, although they were based on data that was collected in the study. Thus there is no or little ability to make any statements that this can serve as a foundation on which all postmodern educational practices should be based. Rather, this is an encouragement for me and, I hope, others to take these ideas to the next step.

CHAPTER IX

CONCLUSIONS, RECOMMENDATIONS, AND DISCUSSION

It has been the goal of this dissertation to "look forward" to an education: an education not only in the postmodern era, but informed by postmodern theory. This attempt has manifested itself through several different means. They include a review of a subsection of postmodern thought; drawing some educational implications of this postmodern thought; using a science fiction scenario to envision an education informed by postmodern thought; articulating constructs and practices that may promote this vision; exploring the computer as a useful tool in this vision; and finally attempting to instantiate this vision and explore what happens in the world of students and teachers.

This is what I have envisioned as a postmodern education. The predominate metaphor for education is the conference where the empowered student working on the private self enters into the least-impositional domain of the world-centered education which decenters instructions. The student is given the "field of knowing" as a resource in the student's attempts to make sense of the world.

This field of knowing manifests itself as a collection of all the codified information and instruction that is collectable; thus it represents to the student many incommensurable epistemes, gazes, and discourses in a fashion that is pluralistic at the level of messages, methods, media, and messengers. It also represents the conflict between these discourses (differends), and within a discourse (aporia), which foregrounds the irony of the student's private position, or any other's position, which he/she must constantly confront within this open web of meaning. The empowered student's goal, in the private domain, is to make sense out of his/her world, either through creation or acquisition of knowledge.

The only limit on the empowered student is the demands of the public self. The public self is the liberal common sense that a community bestows on its members that minimizes the cruelty that happens. This common sense liberal vocabulary is always an evolving, fluid one that is revised within the "conversation" and open debate.

It has been my desire to use this project to speculate in a disciplined manner on the answer to the question, "What would a postmodern education look like if we had the opportunity to radically change our educational system overnight?" I hope this project has been successful in raising some of the many issues that would need to be looked at in order to have a postmodern education. Furthermore, I hope it has articulated some educational

approaches and practices that will spur and enhance the discussion of a postmodern education. I feel I have done this through the identification of a segment of the postmodern literature. I have articulated specific postmodern educational principles and practices, applied these somewhat abstract principles and practices to the world of students and teachers, and explored what would happen. This is obviously not to say that a postmodern education has been explicated and now, our job is to apply it. There are many conceptual, practical and political difficulties that lie ahead.

These difficulties include the list of immediate questions in sections 8B; overcoming the list of practical constraints in section 8D; as well as the traditional educational issues of accountability, rigor, and discipline. Finally, we have the political debates that will be encountered by the likes of Allan Bloom. Although this only scratches the surface of the issues and difficulties that will be encountered when attempting to create a postmodern education, they are useful to make mention of.

There is one issue that I wish to address now which will lead me into the final conclusion of this work--that is, the recommendation for future study. This issue is the similarity between this articulation of a postmodern education and the progressive educational movement, most notably Summerhill. As mentioned before, the world-centered education has some resonance to Dewey action education. The empowered student is also similar to how Summerhill students controlled the curriculum,

and the use of teachers as resources instead of primary lecturers. My knowledge of the similarities is limited at best, for I have deliberately neglected the literature of these progressive educators. There are a couple of reasons for this. First is most obviously the additional size of the literature that would be added to this project. Second, and most importantly, I feel that the landscape of education has dramatically changed in the decades that have followed the progressive education movement in the United States. These profound changes have occured in three areas: social, political, and technological.

Socially this county has always been a country of immigrants. However, the pressure of assimilation to white, Anglo-Saxon, Protestant male culture has always been the major goal of education. Recently, marginalized cultures began more vocally and forcefully demanding time within the mainstream curriculum. This has led to demands for a more multicultural education and a shift in the pattern of college enrollments which currently reflect a white, Anglo-Saxon, Protestant male as the distinct minority. Politically, there has been a profound democratization of higher education, due to the effects of the 60's, that has somewhat trickled down to the entire educational system. Finally, the computer technology that has so profoundly altered our understanding of the world plays a distinct role. Instead of letting a student wander around aimlessly and isolated in a Summerhill-like setting without resources, mentors, or peers in which to

engage certain ideas, a remote student can be connected, via technology, almost instantaneously to all of these and more.

Because of these dramatic changes, I felt it was important to explore the idea of creating a postmodern education as a current movement, before exploring questions of the relationship between postmodern and progressive education, such as: How was progressive education postmodern? How is postmodern education progressive? Can progressive education inform our efforts to create a postmodern education? or Can postmodern theory help "fix" progressive education?

These questions lead to the recommendation for further study. The first recommended study could start with the exploration of this relationship between progressive education and postmodern education. This is important for the following reasons: first; we may be able to use some of the valuable theory, research and practice in the progressive literature to inform efforts in the creation of a postmodern education. Secondly and just as importantly, we must be able to distinguish postmodern education from progressive education so that postmodern education cannot easily be dismissed as the resurrected failure we called "progressive education."

Because technology has been put forth in this work, the second recommended study is to look at the unforeseen postmodern technology within education. Currently, there are hundreds of thousands of computers, VCRs, and televisions in today's

classrooms. It would be interesting to document how these technological devices are postmodern catalysts. Exceptionally fertile ground for this are special projects where some sort of technological saturation is being attempted. There is the Open School: Center for Individualization in Los Angeles, Saturn School of Tomorrow in Minneapolis, The Apple Classrooms of Tomorrow, and dozens of similar technology classrooms and schools around the nation. Each of these would be an excellent site to explore how these devices serve as postmodern catalysts as they did within the examples of the Minitel system in France and the electronic suggestion box at IBM.

The third type of study would be of an implementation nature, to address further the question, "How can one begin to make the world of today's classroom less modern and more postmodern?" This study would take the results of the prior ethnography on the staged instantiation of a postmodern educational environment within this work and bring it into the real classroom dealing with the current pressures of today's schools. This study would once again attempt to articulate not only the successes but the constraints such efforts must face and the compromises that they must make. One arena that I find particularly fertile is to restrict the student to the traditional message of education (fractions, subject/verb agreement, etc.), but otherwise put the student into the postmodern educational environment as described here. An example of this would be to construct the web of information

around a chapter within a math book, say fractions. This chapter could be put into electronic form and resources, different idea, tools, tutor, peers, and lectures could be linked to the student's attempts to make sense out of this chapter. Thus, in the day-by-day events of the school, the class would not have to look very much different from current classrooms. We could then study if and how the students use this web of resources. We could also refine the practical methods of delivering instruction, electronic peer conferences, etc. within this type of modified postmodern educational environment. However, more interestingly, we could look at how the lessons change over time and see the effects this web has on the teachers' instruction and presentation of the message.

The final way to study this postmodern educational environment is through the creation of a full blown educational environment; similar to what I have attempted to do here, but on a larger scale and with more resources and more discourse representatives. This is obviously the most desirable but also the most impractical at this juncture. Because of the obvious need for a critical mass of experts, instructional, and information to create this scenario, a total postmodern educational environment will need to grow progressively in order that one day this critical mass will be attained and this scenario will become a reality.

APPENDIX

PRESERVICE TEACHER ASSIGNMENT

FINAL PROJECT : Research Project Participation

Requirements for the Research Project

1. Must be available and have transportation to the research site.
2. You will be assigned to a software group and asked to spend substantial time learning the program. One of the following:
    1. MacDraw, MacPaint, or Hypercard paint program
    2. TABS : Triangles program
    3. LOGO
    4. Triangles Tutorial Program
3. You then, in collaboration with Ken, identify a perspective on the education of students about triangles.
4. You will research the perspective, within the parameters and leads discussed with Ken.
5. You will develop instructional materials and plans for the perspective to the point that when a student working on the given program turns to you, you can inform them on your perspective. The parameters of these materials will be discussed with Ken.
6. Set time to work with the students. Present your situationally appropriate materials when student requests them.
7. Short class presentation to explain your perspective and experience at the project.

Hand Ins

1. The instructional materials developed and a brief description.
2. A description of what happened with the student.
3. Bibliography of sources that you may have used in the materials development.
4. Reflections of the development process and working with the student (ie Why you did what you did?, How did it work?, What would you do differently?, What did you expect? What were your reactions? etc.) .

Evaluation

Participation - Full and complete participation is necessary because I will be depending on you, the school teacher and principal made their students available to us, and most importantly a student will be counting on you.

Instructional materials - Creative and thoughtful instructional materials

Reflections Paper- Whether or not they are completed.

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