ELICITING AND STUDYING PERSONAL EPISTEMOLOGIES OF THE COLLEGE STUDENTS

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ABSTRACT

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The study examines an original methodology for eliciting and analyzing personal epistemologies of the entry-level prospective teachers. Personal epistemologies are conceptualized as a system of cognitive dispositions that individuals use to make sense of the world. The study is completed within the context of the teacher preparation program in the large, public, Mid-Western University.

The method tested in the study uses the concept of a *projective technique* for eliciting and evaluating personal epistemologies. Participants of the study are confronted with an ill-structured task—an interpretation of the movie within which the possible interpretations of the 'teaching strategies' and 'learning outcomes' are not clearly marked. The movie is used as a projective device thought to shed light onto the participants' thinking about learning and knowledge. The participants are asked to write free-style reflective essays in response to the movie. The analysis is made of what the participants reveal about their own thinking by what they say about the observed.

Specifically, the study examines the participants' selectivity and interpretation patterns that may be indicative of their thinking about learning, and, at the same time, suggestive of their personal epistemologies. Categorical schema for the description of personal epistemologies is developed.

This method offers a more inductive and discrete approach, with less intrusion on the part of the researcher, in comparison with the large-scale questionnaires and survey-type studies or clinical interviews widely used in the current research on personal epistemologies. In its conceptualization and analytical approach, it is closer to the methods used in the humanities. The authorship of the form and content of response and the ambiguous target of reflection, together, enable a less formal and more configural, metaphorical, representation of thinking. This approach is sensitive to the details of the participants' responses as well as the contexts in which the investigated epistemologies are supposed to be applied. By emphasizing the shift of the researcher's interest from the ways in which the individuals' views differ from the 'standards' to understanding cognitive dispositions the individuals possess, this dissertation attempts to contribute to clarifying the philosophical positions that underlie both the conceptual frameworks and the methodological issues of empirical studies. In addition, the naturalistic type of analysis completed in this study lead the author to rethink the ontological nature of the construct of personal epistemology. The dissertation is concluded with propositions offering an alternative theoretical model of representation of personal epistemology to be investigated in the future studies.

To my Mother,

and the voice of her cello

that will always awaken the best in me...

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Although the writing of this dissertation has been the greatest solitary experience in my life, it would have not become what it is without the inspiration and generous help from various people. I had a brilliant committee, whose members were the brightest intellectuals and the wittiest fellows. Over the past 6 years, I had the privilege to work with John M. Dirkx, my academic adviser, dissertation co-director, and chair. John's passion has led me through the years. He shared it generously and with an incredible dedication to the values and philosophy he aspires. John is the one who taught me everything by his own example of working, doing his scholarship, and living his life. He taught me to remain myself, and he accepted me that way. We wrote and presented together at professional meetings, sharing deep interest in the pedagogy and psychology of transformative learning. John guided my first research in the field. This has been a very engaging experience. One day, John brought the "Renaissance Man" to the class I was taking at the time. I was impressed with the teaching potency of the movie. This impression has brought my dissertation to life.

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INTRODUCTION

Statement of Purpose

This dissertation examines a methodological approach for eliciting and analyzing the thinking of the entry-level prospective teachers about learning, knowledge, and knowing for the purpose of making plausible inferences regarding these individuals' *personal epistemologies*. My conceptualization of the construct of personal epistemology is grounded in two major assumptions: (1) Personal epistemology concerns an individual's cognitions about the nature of knowledge and the nature of knowing,[1] and (2) personal epistemology includes (or closely relates to) an individual's stance on the nature of learning.

The focus of the study is explained by the role that personal epistemology plays in prefiguring our world-views, as well as the ways in which we relate to the world. Personal epistemology influences how we deal with the flow of increasingly sophisticated information, make judgments about the credibility of various sources of information, rate political decisions, handle the demands of authorities, weigh the evidence of investigations, and define our own roles in the various communities. In all of these instances, our personal epistemology shapes the way by which we make meaning of each of the situations. Educators have long learned that an individual's stance on knowledge and knowing has a powerful influence on learning. More so, some personal

[1] In defining the construct, I am borrowing the language from P.R. Pintrich, 2002.

epistemological orientations are more appropriate to teaching profession than others. In today's tumultuous world, there is an increasing demand for the kinds of epistemological orientations that are conducive to the tolerance of ambiguity, deviation from routine, and the use of multiple explanatory frameworks. Therefore, deepening our understanding of the nature of personal epistemologies and finding ways to evaluate their characteristics most adequately is an important focus for a research effort as well as a valuable strategy for improvement of the teaching practice.

By testing the original methodological approach this dissertation explores the concept of using a *projective technique* for eliciting and evaluation of personal epistemologies. The concept of a *projective technique* is based on the following proposition: The participants are given the opportunity to look at the same source of stimulus, a movie in this case. Then an analysis is made by a researcher of what the participants reveal about their own thinking by what they say about the observed. The contents and form of the response are authored by the respondents. In other words, the participants make their own meaning of what they see in the movie. Of particular interest was the question *whether the projective technique can help identify (and, if so, how) the dimensions of personal epistemologies of the prospective teachers, as revealed by an interpretive analysis of their free-style reflective essays written in response to the stimulus.*

Rationale

Methodological challenges that researchers face when studying the complex phenomenon of personal epistemologies have greatly influenced my thinking about the nature of personal epistemology and its possible dimensions as well as the ways to evaluate these. While the use of large-scale, survey-type assessments is presumed to allow for validity of the studies as well as illuminate on the importance of personal epistemologies in problem solving, there are serious limitations to these methodological approaches. First, they are largely de-contextualized; that is, they are not sensitive to the contexts in which personal epistemologies are applied. Second, they are overly intellectualized; that is, they conceptualize the dimensions of personal epistemologies as manifested through a largely cognitive process, leaving beyond the scope of assessment the affective and intuitive aspects of personal epistemologies. Third, they limit the possibility for individuals to make their own meaning (to author the contents and form of the response), thus limiting the range of elicited dimensions of the construct. Similarly, another methodological trend of research, which relies on clinical interviews and scores responses according to developmental stages, seems to impose meaning through the language and structure of the questions asked, while often attempting to capture personal epistemology away from the contexts, in which it is supposed to be applied. Though this second trend admits, at the conceptual level, the role of the affective and intuitive aspects of personal epistemology, there has not been enough of empirical work done to provide for confirmatory evidence.

It is these methodological challenges that motivated me to undertake a different, more indirect approach to eliciting and evaluating personal epistemologies of the

prospective teachers, within the context of the undergraduate course on Educational Psychology. Specifically, I used the movie "Renaissance Man" as a provocative stimulus, and asked the undergraduate students enrolled into the course to interpret the themes of teaching and learning encapsulated in the movie by writing a free-style reflective essay. The movie was thought to serve as a projective device, that is, it was thought to project, through analysis of the students' responses, onto certain elements of their personal epistemologies.

Conceptual Framework

The conceptual framework of this study is characterized by *five key assumptions*:

1) Knowledge is *complex*.

2) *Personal epistemology* is the system of cognitive dispositions that individuals use to make sense of the world. For describing various kinds of personal epistemology or epistemological orientation, I also use the term *personal epistemic framework*—the framework underlying the psychological nature of cognitive dispositions that individuals use to make sense of the world.

3) There are *two kinds of personal epistemologies*. One is associated with *oversimplification of complexity*, known to be related to single representations, analytic compartmentalization, recognizing orderly and linear sequentiality in relationships between the parts, intolerance of ambiguity, and relying on recall and reciting from an authoritative source. Such personal epistemology holds concepts detached from one's life experiences. The other is characterized with opposing features, more *conducive to* the processing of *complexity*: multiple representations (using multiple explanatory frameworks, assembling partial representations to form complete

accounts), synthetic integration of the parts (recognizing interconnectedness among the parts and patterns in relationships between the parts), disorderliness and heterogeneity (expecting deviation from routine), tolerance of ambiguity, the use of pre-existing knowledge in a combinatory manner (adapting a variety of appropriate strategies to solve non-routine problems; applying disciplinary knowledge in context outside of the discipline), experiential tone of concepts, and self-reliance in learning.[2]

4) The *verbal-visual integration* within the interpretive process is critical to uncovering the tacit frameworks of an individual's worldview, and thus has a potential to reveal personal epistemology. This assumption stems from Arnheim's propositions of visual thinking which invite researchers to pay attention to the provocative potency of the aesthetic experiential contexts—particularly contexts involving visual stimuli—when imagination and intuition enter the human activity and a new form of understanding is created. An example of such an aesthetic experience might be a response to an ill-structured task, presented visually and opened to the participants' choice of conceptual themes (i.e., open to their own purpose for reasoning) and representational genres (i.e., open to their creativity). This assumption underlies the decision to use the movie as a projective device for eliciting personal epistemologies.

5) Based on the reviewed literature (Ch. 1), I assumed that *personal epistemologies are related to thinking about learning.* Therefore, the indicants of the ways in which prospective teachers think about learning may inform about their beliefs about the nature of knowledge and the nature of knowing. Specifically, by using the essays that the students write in response to watching the movie "The Renaissance Man" the study examines the students' selectivity and interpretation patterns, which may be indicative of

[2] These characteristics are adapted from the *Cognitive Flexibility Inventory*, Spiro and associatess, 1996.

their thinking about learning; and, at the same time, suggestive of their personal epistemologies. By using specific examples of the students' responses, I illustrate the selection lens and categorical schema used in the analysis.

These examples aim to demonstrate a methodological approach which is closer to the research strategies used in the humanities, different from the widely used questionnaires and survey-forms in current research on personal epistemologies. The latter usually ask people to 'check' one of the boxes whose language and form are pre-determined by researchers. The approach used in this study, on the contrary, is grounded in the literary-type analysis of the individuals' texts, which are developed freely in response to watching a movie that suggests various possibilities for interpretations. The presented methodological approach relies on the discretely elicited participants' response to an ill-structured task. While the movie does not have clear markers regarding teaching strategies and learning outcomes, the participants of the study are asked to write their responses in relation to teaching and learning as they see these in the movie. In other words, while the nature of the film implies the development of ambiguous, open-ended themes, the participants make their own choices regarding the interpretation themes as well as the genre of writing (in terms of the chosen vocabulary, organizational structure, etc.). The form and the content of the individual's response are developed by the individuals themselves, which, like any creation of a new form, are characteristic of an artful experience. In their reflective essays, the students write about their beliefs about learning and teaching without necessarily thinking about pre-figurative schemas that are responsible for their beliefs. The major task of the analysis is to reveal certain patterns of students' interpretation that are indicative of their personal epistemologies.

The conceptual assumptions listed above call for complex development of personal epistemologies. The majority of the studies consider the development and manifestation of personal epistemology as a largely cognitive process or structure (Duell & Schommer-Aikins 2001; Hofer & Pintrich 1997; King & Kitchener 1994). The conditions stemming from the above assumptions, however, model the expectation for the intuitive, imaginative, and aesthetic antecedents for epistemological development. While some of the research on the adult, career, and vocational education underscores the importance of imaginative ways of knowing (Marsick & Volpe, 1999; Marsick & Watkins, 1997; Saavedra, 1996; Taylor, 1998), there is little in higher education literature that deals with this issue (Keifer-Boyd, 1997; Wagner, 1999; Warren, 1995). The notion of knowing as an imaginative process (Arnheim 1969, 1996; Dirkx, 1998, Eisner 1998, 1994; Green 1995) puts the learners' experiences at its core and suggests that making meaning of one's experience is apprehended through symbols and images. In other words, the shaping of one's personal epistemology involves the aesthetic modes of thought, with their dominating imagination and intuition. The particular function contributed by the aesthetic is that it makes the nature of the object within the focus of the individual's investigation expressive. Most commonly, the aesthetic dimension of ones thinking makes the object visual or it can make the object auditory or tactual as well.

Given that the majority of literature on personal epistemologies came out of the cognitive psychological tradition, the dissertation addresses the need to attend to other aspects of the construct, such as the aesthetic and intuitive, or unreasoned.

The complexity of epistemological assessment raises questions regarding the underlying assumptions of the theory, as well as the underlying assumptions of the measurement instruments. Much of the research on personal epistemology to date has focused on Perry's notion of epistemology as 'beliefs'. However, its nature, as evidenced by many studies, is much more complex in that what is claimed as 'beliefs' does not always manifest as such, especially when it comes to various disciplinary domains and contexts. A proposition that personal epistemology is a system of resources—a cognitive machine that enables organizing and manipulating knowledge—have been advanced recently by Hammer and associates (Hammer & Elby, 2002). At the end of my analysis, I speculate in favor of this proposition and suggest a theoretical model of the construct of personal epistemology, which I use for outlining my future research agenda (see 'POSTSKEPTICAL' INSIGHTS). The major body of analysis, however, presents the study of a much smaller scale that aimed to test the projective technique as an alternative method for eliciting and evaluating personal epistemologies.

This study explores the possibility of a method that is unique for current epistemological research. This is the first use of this type of a methodology for uncovering personal epistemologies in a non-directive way. Naturally, I expected that the first results of applying this approach would not be definitive, but rather would elicit some fruitful questions from opponents about possible alternative interpretations. In other words, my intent in doing this study has been to begin revealing issues that have to be taken into consideration in future studies when using the projective technique. I anticipate

the findings of this study to be fruitful for my future research on personal epistemologies within the contexts of Higher and Adult Education.

This study is completed within the context of the teacher preparation program at Michigan State University, which offered me a flexible and supportive exploratory platform.

The structure of the manuscript

I have organized this manuscript around 5 questions that seem to be salient for this study:

1) What is 'personal epistemology,' how this construct is defined, and what challenges in the current research have driven this study? (Chapter ONE)
2) Why did I choose my own class as a research site? (Chapter TWO)
3) Why did I choose the movie "Renaissance Man" as a projective device and how did this choice contributed to the shaping of the analytic tool? (Chapters THREE and FOUR)
4) What challenges did I encounter while working with ambiguity in this methodological study? (Chapter FIVE)
5) What lessons did I learn and what possible avenues might this study offer for future research and teaching practice? (Conclusion)

In the end, I share with some speculative thoughts derived from the analysis and useful for a broader theoretical and empirical work in studying personal epistemologies

('Postsceptical Insights'). In Appendix A, I share some examples of student work other than their reflective essays to the "Renaissance Man" ('Performative Essays'). These examples provide basis for an additional reflective commentary in support of some of the considerations discussed earlier in the manuscript. They also intend to illustrate the potency of the learner-created multiple interpretive texts as vehicles for promoting the externalization of the learners' personal epistemologies.

I will walk the reader through the chapters of the manuscript, offering my current thinking with regard to these questions and hoping to elicit new questions among the readers that would initiate a fruitful discussion of the issues addressed in this study.

ONE

Personal epistemologies of researchers of personal epistemologies: Theoretical, rhetorical, and methodological issues in current research

Since the seminal work of Perry (1970) on the epistemological development of college students, educators' interest in this phenomenon has grown dramatically. Regardless of the disciplinary affiliation—whether it is cognitive psychology, developmental psychology, higher or adult education, or science education —scholars are trying to find a common ground in defining the conceptual clarity related to the construct of personal epistemology. The pool of reports on studies in epistemology has been rapidly increasing within the last few years. These reports suggest, however, that, although researchers have made many efforts to conceptualize the intricate nature of personal epistemology, as well as find reliable ways to measure what they define as epistemology, they still face many challenges.

The list of challenges begins with defining the construct. Literature on personal epistemology offers a wide variety of professional terms used to define the construct, and these terms appear in combination with the adjective 'epistemological': stance / position / belief / theory / thinking / cognition(s) / resources / perceptions / framework / reasoning skills /attitudes, and others. Therefore, it takes some effort for a reader to figure out the personal epistemological assumptions of researchers that are underlying both their stance on the nature of the construct, and their interpretation of what they claim are the personal epistemologies of the individuals in the studies. Multiple definitions also make it difficult

to summarize trends in research, and to develop generalizations across the studies on personal epistemologies.

A question being raised today is whether researchers need a common construct defined in common terms: Is it even a good idea? The worthiness of having some sort of consensus in defining the construct becomes more evident through consideration of the challenges in the current research on personal epistemology. In this chapter, I will briefly describe some of these challenges, including the conflicting views. I have focused my description of the challenges around particular issues, which motivated this study: issues of defining the construct, the ontological nature of the construct, conceptualization of its components, and issues related to measurement.

Defining the Construct

While there is no consensus on which of the above definitions best represents personal epistemology, most of the literature agrees on the proposition that this construct concerns an individual's stance toward the nature of knowledge and the nature of knowing. Two general propositions describe the current dominating perspectives on personal epistemology.

Proposition 1: Personal epistemology is developmental, development is the aim of education (Kohlberg, 1969), *and thus part of the goal of education is to foster epistemological development*. Stage theories of epistemological development introduced by Perry (1970) state that epistemological thinking develops in unidimensional stages. The key phrases of this model are "sophisticated" and "over the course of development"

(Pintrich, 2002, 401). Kitchener (1983) considered *epistemic cognition* as a monitoring process that occurs in the solving of ill-structured problems. Kitchener and King (1994) introduced *Reflective Judgment,* a seven-stage model of development that encompasses both personal epistemology and the skills of critical thinking. Openness to new interpretation is a key element of this model. Kuhn (1991) speaks of evaluative epistemologists (the highest level) as open to the possibility that their theories may be modified by genuine interchange. Baxter-Magolda, Belenky, Clinchy, Goldberger, and Tarule (1986) furthered this line of research by adding the lenses of age, gender, ethnicity, and social class, coining a term of 'connecting learning', and addressing the question: "How come so many smart women feel so dumb?"[3]

This line of research has been concerned with illuminating the processes by which individuals make meaning. One of the major challenges stemming today from this theoretical model relates to the timing of restructuring and shifts in personal epistemologies (Chandler et al, 2002). Methodological issues related to the meaning imposed by the researcher's questions, limitations to internal validity due to self-selection, as well as the way in which variations in the sophistication of thinking for different epistemological dimensions might be treated developmentally, remain to be addressed in this area of research (Pintrich, 2002).

Proposition 2: Personal epistemology exists in the form of beliefs, or theories, and what is learned is strongly affected by the epistemological beliefs that individuals hold (Ryan, 1984; Schommer, 1990; Schommer et al., 1992; Hofer & Pintrich, 1997).

[3] The question was worded by Mary Belenky (in Clinchy, 2002).

This proposition implies that epistemologies are modeled along multiple dimensions which are relatively independent and imply the notion of 'having' or 'not having' either simplistic or more sophisticated epistemological beliefs. The widely used Schommer's (1990) Epistemological Beliefs Questionnaire employs a Likert-type scale to assess independent dimensions of epistemological beliefs. These dimensions include: (1) *the stability of knowledge* (tentative to unchanging); (2) *the structure of knowledge* (isolated bits to integrated concepts); (3) *the source of knowledge* ('given by authority' to self-reasoned); (4) *the speed of knowledge acquisition* (quick-all-or-none to gradual); (5) *control of knowledge* (fixed at birth to life-long improvement) (Schommer-Aikins, 2002, 104).

One of the methodological problems with this model stems from the psychometric validity issues that originate in the questionnaire instruments and statistical analytical procedures. As Wood & Kardash (2002) argue, many such procedures fail to verify the assignment of individual survey items to the five hypothesized dimensions by factor analyzing the individual items. When Wood & Kardash looked at how the items in Schommer's (1990) and Jehng at al.'s (1993) survey actually load on the factors to which they have been assigned a priori by the researchers, substantial discrepancies have been found. Some of the researchers doubt that personal epistemology can be reliably measured through self-report responses matching the pre-defined criteria on Likert-type scales.

Besides the issue of the demand-characteristics (influences of respondents' expectations of what they 'ought to be' responding on a survey item), there is also doubt as to whether evaluation of personal epistemology can be valid when done out of the

context within which this epistemology is supposed to be applied. From the perspective of this line of research, it also appears difficult to explain how the individual cognitive and contextual factors work together to promote or constrain certain epistemological behavior or its alterations.

Issues outlined for both of the above theoretical models, particularly those related to the temporal and contextual aspects of restructuring and shifts in personal epistemologies, reveal a key challenge researchers face at the stage of theory building—one of understanding the *ontology* of the construct. The question to ask is: What ontological assumptions do researchers hold regarding the nature of personal epistemology when they intend to measure it? A related question is what those assumptions are when researchers intend to capture individuals' personal epistemology out of the context of its application (which is often the case with clinical interviews and questionnaires). The next section attends to both of these questions.

'Ontological unitarity' versus 'manifold ontology': Researchers' stances on the nature of the construct

There appears to be a substantial diversity among the researchers' individual stances. Within the last decade, literature on personal epistemologies has revealed competing claims about the ontological nature of the construct. Coming primarily from research on conceptual change (DiSessa, 1993; Minsky, 1986), a significant doubt has developed around the relevance of representation of the construct in the form of single, uni-dimensional beliefs or traits. Such representation implies what some of the

researchers label an 'ontological unitarity' (Dennet, 1991; Hammer & Elby, 2002); that is, a stance on the nature of epistemology which presumes that the construct can be comprised of unitary 'parts' or 'single agents' (Minsky, 1986). It is this 'unitarity' of the researcher's stance, guiding the majority of the studies for the last 20 years, that has been raising questions in the recent literature on personal epistemology. Many researchers of personal epistemologies, Hammer and Elby argue (2002), have presumed the ontology of "beliefs" as "essentially unitary components of essentially stable epistemologies." This is how these authors explain their use of the word *'unitary'*:

> By unitary we mean that each belief corresponds to a unit of cognitive structure, which an individual either does or does not possess. Construed in this way, epistemological beliefs are analogous to the "concepts" or "conceptions" posited as elements of cognitive structure [and]... taking the form of theories or traits (Hammer & Elby, 2002, pp. 170-171).

Some researchers have argued, however, that the ontology of personal epistemology does not seem to fit the notion of 'beliefs' or 'traits,' because the latter tends to assemble the models of personal epistemologies in a mechanistic way, as if comprised of separate and substitutable parts (diSessa, 1993; Hammer & Elby, 2002; Minsky, 1986). From the perspective of the traits or beliefs, the ineffective 'parts'-like epistemologies are to be substituted by more sophisticated ones at the end of the educational process. Such a perspective is questioned today due to the findings in some of the studies, particularly those that suggest inconsistency of personal epistemologies across disciplinary domains (Hofer & Pintrich, 1997a; Stodolsky, Salk, and Glaessner, 1991). Hammer & Elby (2002), for example, argue that in considering naïve epistemologies to be made up of belief-like constructs such *as "knowledge is certain,"* current perspectives on

epistemology offer no account of what may be "the raw material from which students could develop new structures, such as *'knowledge is contingent on context and perspective'*" (p. 170). Attributing the experience of meaning making to 'ontological unitarity,' that is explaining this experience by the single, substitutable theories or traits, is comparable to understanding of "complex behavior, such as bird flocking, as having a single, central, organizing source" (Wilensky & Resnick, 1999).

Stemming from this difficulty in ascribing a certain ontological form to the construct of epistemology, an alternative theoretical model arose. It states that epistemologies are better described as a system of cognitive *resources* or *repertoires* responsible for the forms and processes by which knowledge is organized and manipulated along multiple dimensions (diSessa, 1993; Bell & Linn, 2002; Hammer & Elby, 2002). In the process of learning, more fine-grained epistemological resources are activated and engaged in ways that are context dependent. Such a stance on the nature of personal epistemology is labeled as *'manifold ontology'* (Hammer, 2000). DiSessa (1993) has proposed such ontology in the form of 'p-prims,' 'phenomenological primitives,' which he assembled into a model explaining the students' way of making intuitive sense of physics. Following this line of conceptualization of the construct, Lising and Elby (2002) talk about the form of epistemology as a "template for organizing knowledge" (such as stories, rules, and rule systems), and epistemological activities as "ways of manipulating knowledge" (brainstorming, checking, and so on).

Dependency on the domain-specific knowledge is emphasized particularly strongly in this perspective. Hammer & Elby (2002) affirm that "there is no reason to

expect that what an individual believes about knowledge in the realm of interpersonal relations, for example, about knowing and learning how to get along with others, must be consistent with what he or she believes about knowing and learning in an introductory physics course" (p.173). Stodolsky, Salk, and Glaessner (1991) similarly suggest that beliefs the students hold about knowledge and learning in math can vary from beliefs the same students hold about knowledge and learning in social studies. Hofer and Pintrich's (1997a) study showed differences between students' beliefs about knowledge and learning associated with psychology and science. The findings reported by these researchers suggest that research methodologies should be sensitive to the contexts in which the construct of personal epistemology is measured.

'Hot Cognition' Versus 'Cold Cognition': The Conceptualization Divide

Despite the diverse definitions used for the construct of personal epistemology in the studies mentioned, what all of the theoretical models described above share is their concern with an individual stance toward the nature of knowledge and nature of knowing. The various ways in which researchers conceptualize both of these dimensions within the construct, however, reveal the particular challenge that motivated my study, that of over-intellectualization of the construct.

Nature of knowledge is generally conceptualized in research on personal epistemologies as fixed / unambiguous versus a more fluid view (knowledge is tentative and evolving). It is the definition of *knowledge* itself that leads us to pay close attention

to the rhetorical and conceptual issues revealing themselves across the various camps of researchers.

A divide in conceptualization of the nature of knowledge is particularly vivid in Dole & Sinatra's (1994) description of differences between the social and cognitive psychologists, which indicates a particular focus on *'hot cognition'*—the affective factors like motivation, interest, and beliefs. According to their review of literature, such a focus has revealed itself in the cognitive research studies that attribute the central role to the construct of prior knowledge (Dole & Sinatra, 245). That trend of research, while having recognized that there are 'important affective as well as cognitive processes that influence learners as they struggle to make sense out of the instruction they receive" (Dole & Sinatra, 245), has not addressed the affective processes in empirical studies. This means that affect still remains an important area for an empirical investigation. Importantly, it still requires further conceptualization as well, since the social and cognitive psychologists attribute differing meanings to this construct as they differentiate between *affect* and *cognition,* as well as between *knowledge* and *evaluation of knowledge*.

According to Dole and Sinatra (1994), social psychologists make the following distinctions:

1) *Cognition* is referred to within specific contexts of their studies as thought or *knowledge,* and is defined as an *unexamined statement*.
2) *Affect* is referred to as feelings, emotion or *evaluation of knowledge*, the latter being associated with the 'commitment to the truthfulness of knowledge defined as the *belief*.' Social psychologists conceptualize *beliefs* as memory representations consisting of networks of associations. A network of beliefs builds up an attitude,

thus subsuming beliefs under attitudes about an object. "Object' can refer to anything from concrete objects, to people, to abstract ideas or positions or views about something (Dole and Sinatra, 1994, pp. 248-249).

Cognitive psychologists, on the other hand, refer to knowledge when studying thinking, as opposed to affective constructs like feelings, attitudes, and motivation. Eagly and Chaiken (1993) speculate that affective constructs were not considered to be a part of the study of cognition, because they did not fit into the information-processing approach adopted by cognitive psychology during the cognitive revolution. Cognitive psychologists conceptualize knowledge as the *schema* or *schemata* of cognitive processes. The interconnected and interrelated sets of schemata are reflected in beliefs, or in *world-views.* Or, as Spiro and associates (1996) put it, "*the epistemic world-views* are beliefs about the phenomena of the world that prefigure the form knowledge schemata will take for an individual" (S 51).

Similar to social psychologists, cognitive psychologists use the term *schema* to describe the nature of knowledge storage and representation in memory (Anderson & Pearson, 1984). It does not seem, however, that their discussions of schemata include affective factors, nor was I able to identify cognitive empirical research addressing those factors.

Nature of knowing can be described by (1) the source of knowledge and (2) the justification for knowledge. The source of knowledge is commonly presented as a continuum from the idea that knowledge originates outside the self and resides in external authority from whom it may be transmitted, to the conception of self as 'knower' with the

ability to construct knowledge in interaction with others (Hofer & Pintrich, 1997, 120). This line of conceptualization of the nature of knowing is still often approached as a rather 'cold-cognition'-type process. A fruitful part of this work is that it points to the mechanism of change in personal epistemology. The evolving conception of self as knower would be a developmental turning point within the change of personal epistemology. There is a lack of empirical studies addressing this developmental issue; therefore, research is needed to elicit the possible origins of such turning points.

There is some empirical work, however, that seems to attend to the affective and intuitive aspects of personal epistemology. Researchers involved in this line of conceptualization consider the source of knowledge from the perspective of attitudes. Attitudes constitute an affective domain of thinking, thus pointing researchers to a way of coming to know which Belenky describes as an *intuitive reaction*, personally experienced (Belenky et.al., 1986). According to Belenky and her associates, knowledge can be perceived as coming in the form of intuition. This compelling argument, used to prompt responses and describe the women's ways of knowing, can be extended toward a fundamental conceptual proposition that a researcher would make when designing the study of the participants' epistemological beliefs. Despite of the fruitful work of Belenky and colleagues, the outcome of their research has been claimed biased with gender-related issues (due to the sampling of women only) and there is still lack of an empirical demonstration of the validity of such a proposition.

The conceptualization of the second component of this dimension, *justification for knowledge*, also appears to be over-intellectualized. In the majority of the studies, justification for knowledge is treated as merely a 'cold-cognition,' or cognitive process

(as implied by the early cognitive psychologists). Hofer and Pintrich (1997) summarize these considerations: "As individuals learn to evaluate evidence and to substantiate and justify their beliefs, they move through a continuum of dualistic beliefs to the multiplistic acceptance of opinions to reasoned justification for beliefs" (p. 120). King and Kitchener's (1994) model, for example, by focusing on students' reasoning and justification for their epistemological thinking, reveals such a cognitive focus rather explicitly. This model implies a highly rationalized way of coming to know as it measures the objective intellectual skills of argument and judgment. It reveals, particularly, the value of the *reasoned* argument as "worthwhile, and as the most productive path to knowledge and informed understanding" (Kuhn & Weinstock, 2002, p. 138). This value seems to be increasingly dominant in modern American culture.

Schommer's (1994) model, on the contrary, describes students' epistemological beliefs as relatively unexamined beliefs or assumptions. Though this dimension of Schommer's construct remains empirically not demonstrated, it seems to point in the direction of research that would focus on other patterns of epistemological development. Specifically, it would be valuable to examine the *intuitive* ways of coming to know. Therefore, I would extend the continuum of change in this dimension of epistemological beliefs as it is described by Hofer & Pintrich (1997, p. 112)—on its higher level—to the acceptance of unreasoned, but rather *'sensed'* (i.e., felt, seen, heard, imagined), justification for personal beliefs.

My assumption here is supported in part by the memoirs of some well-known scientists and mathematicians describing how they have come to know what they have discovered. "Most striking at first is this appearance of sudden illumination, a manifest

sign of long, unconscious prior work,"-wrote Henri Poincaré-"The role of this unconscious work in mathematical invention appears to me incontestable, and traces of it would be found in other cases where it is less evident" (Poincaré, The foundations of science). Albert Einstein emphasized too the role of the unconscious work of the mind, before the idea can be written or spoken. In the letter to Jacques Hadamard, he wrote about the visual and motor images that played with each other in a combinatory manner. These images became the essential feature of his thought—well "before there is any connection with logical construction in words or other kinds of signs, which can be communicated to others" (in Hadamard, 1996). The history of the 20th century scientists is recorded in biographies as a continuous discovery through a play with mental images—amorphous, hard to articulate in the beginning, and constantly changing. The challenge for me as a researcher would be to find the indicants of such imaginations that can be inferred toward the unconscious aesthetic selection of ideas, hence, toward certain personal epistemologies. In any case, the fact of revealing the imagining of justification, whether verbally or visually, can inform about the contextual origins of the 'sensed' or intuitive justification. I will return to the contextual issue later in this chapter.

The ontological and theoretical assumptions of each model of personal epistemology described earlier in this chapter provide the basis from which stances on what knowledge counts most, and how that knowledge is acquired, derive. Since education deals with knowledge, a conceptual understanding of how personal epistemology relates to knowledge acquisition, or learning, would help clarify the real focus of the many disputes of the 'effective' teaching practices. The question is whether

an individual's stance on the nature of learning is part of the construct of personal epistemology. Attending to the rhetorical differences and their underlying ontological stances implied by the research methods and popular educational practices seems to be a legitimate starting point for facilitating clearer focus on the significant epistemological issues embedded in such disputes.

Does Personal Epistemology Include 'Beliefs about Learning'?

Much work on personal epistemology has assumed that this construct relates to the individual's learning as well as the individual's stance on the nature of learning, or what it has been generally called *'beliefs about learning.'* There have been differences, however, in defining this relation. Stemming from the implicit ontological and theoretical assumptions described above, the rhetoric of research on personal epistemology has coined the various terms for describing each of the theoretical models: *developmentalist*, *trait-oriented*, and *contextualist*, or resources-oriented (notes from the plenary session on research in epistemologies, 2002 AERA, New Orleans). The three corresponding underlying ontological positions imply different outcomes of interest in the learning process. In the first case, epistemological development is the outcome variable often seen as indicative of broader intellectual development. In the second, it is typically an academic performance that is the dependent measure, and beliefs are seen to affect or mediate that. In the third, the outcome might be knowledge construction influenced by epistemological resources that have been activated in the process of meaning making. We thus embrace three implied methodological assumptions of the empirical evidence for the relationship between epistemology and learning, hence a sound emphasis on identifying

academic achievements of the participants in the studies of personal epistemologies (Schommer, 1990, 1993; Qian & Pan, 2002).

More so, some of the researchers logically assume that the individuals' stances on the nature of learning, that is, on the phenomenon by which people learn and come to understand, are part and parcel of personal epistemologies (Pintrich, 2002). Under this assumption, if individuals make an ontological commitment to a particular stance regarding certainty of knowledge (i.e., absolutist versus relativistic, as in Perry's work), then they will perceive and think about their experience in a certain manner (Perry, 1970; King & Kitchener, 1994; Baxter-Magolda, 2001; Belenky et al, 1986; Schommer, 1993; Hofer & Pintrich, 1997).

Empirical evidence for such an assumption varies among the methodologies. Baxter Magolda (1992), for example, studied how epistemological development affects interpretations of educational experiences. Her interviewing methodology suggests that the individuals' stances about knowledge are closely related to stances about learning, teaching, and intelligence (innate ability). Other studies that utilize open-ended interviews (Perry, 1970), classroom observations (Hogan, 1999), and case studies that are conducted in a manner closely aligned to the context of learning (Hammer, 1994) provide demonstrations of methodological approaches that connected construct of personal epistemology to the individual's stance on the nature of learning. At the same time, Wood and Kardash (2002) point at some factor analytic work that demonstrates the beliefs about knowledge (certainty, simplicity, source, stability) and knowing (reasoning/justification) are separable dimensions from beliefs about learning (quick/slow, easy/complex). This empirical divergence in findings reflects the varying

theoretical and ontological assumptions of the different models of personal epistemologies. As Pintrich (2002) points it out, "it is not surprising that models that start with an assumption of different dimensions, and then use self-report questionnaires with separate items reflecting the different dimensions, ultimately find factor structures that uses three, four, or five or more separable dimensions" (p. 303). There is a need, therefore, for the use of more experimental methodologies that probe different theoretical models. Pintrich suggests, for example, that the attempts to represent personal epistemology with the help of theoretical models that resemble a 'network,' or a 'state,' rather than a trait or theory, might help with a definition problem. Such new models can also help clarify the relationship between personal epistemology and the individual's stance on the nature of learning.

On the Issue of Context

The evaluation of personal epistemologies and its potential component—the individual's stance on the nature of learning—faces a particular methodological challenge: to avoid the problem of de-contextualization inherent in many of the current studies. The majority of the methodological approaches ask participants to make generalized responses about their views of learning without regard to context, thus ignoring the profoundly different experiences that the participants observed to have in different contexts—different classes, grade levels, and formal/informal experiences. To address this methodological issue, it is important to consider contextually sensitive models of personal epistemology at the stage of theory building. The model of epistemology as resources advocated by Hammer & Elby (2002) appears to be

particularly sensitive to the issue. Similarly, Hofer and Pintrich's (1997) theory-oriented model, lately described by Hofer as a *process*, underlines the peculiar role of the context in activation of certain personal epistemologies, 'epistemological beliefs organized into theories' (Hofer, 2001).

In this study, I have attempted to attend to the issue of context sensitivity at two levels: conceptually and methodologically. At the conceptual level, I reconsidered the notion of context for epistemological behavior. The prior research on epistemological development has addressed the issue of context as related to gender, age, or ethnicity. I instead, conceptualized the context by focusing on the aspects of aesthetics and affect (in addition to the domain-specific aspects, on which I comment below). I anticipated that these aspects play an important role as significant ingredients of the context, within which I anticipated my students' personal epistemologies to apply. By doing so, I hypothesized that aesthetics and affect provide for *intuitive* antecedents of personal epistemologies. My hypothesis borrows from the propositions established by the philosophers and psychologists acknowledging the role of intuition and imagination in thinking and relating to the world (Arnheim, 1969, 1996; Bakhtin, 1984; Dewey, 1934, 1938; Eisner, 1994; 1998; Green, 1995). While I certainly did not expect to find a one-on-one correspondence between affect that might emerge within an aesthetic experience and the epistemological behavior (application or manifestation of personal epistemologies), I anticipated finding some proof of a significant relationship between the two.

At the methodological level, I have attempted to elicit and evaluate the students' personal epistemologies within the context of a course, in which themes of learning, knowledge, and knowing were at the core of the instructional content and were processed by the students in a variety of ways. The particular concept of the visual projective device, which I am testing in this study, probes whether (and, if so, how) the students' interpretations of their visual experience—watching and reflecting on a movie—may inform about their ideas about knowledge as well as the nature of knowing (or ways of going about knowledge).

Based on my interpretation of the literature referred to above, I would describe the two major dimensions of an individual's personal epistemology– *nature of knowledge and the nature of knowing*– as relying on the following propositions:

- these dimensions are related to each other in coherent and internally consistent ways
- they make some important distinctions about knowledge, and
- they shape an explanatory framework for thinking about knowledge and coming to know.

These propositions allow me to assume that when I ask students what they think about learning and/or teaching, I might find some ideas in their responses that would reveal their thinking about one or both of the two dimensions.

Conclusion

In this chapter I have described several challenges in research on personal epistemologies that were particularly influential in motivating this study. While reviewing the current literature, I addressed specifically the problems researchers face in

defining the construct, over-intellectualization of the construct and its dimensions, and methodological challenges in providing sensitive accounts of contextual aspects as well as the affective and intuitive dimensions of personal epistemologies. Trying to tune into the varying rhetoric adopted by different camps of researchers, I paid particular attention to the ways in which researchers conceptualize the link between personal epistemology and the individual's stance on the nature of learning. These conceptual links, as I understood them from the reviewed literature, helped me to conceptualize the framework for my study. I felt it reasonable to launch the study with the assumption that the students' statements related to the nature of learning, and similarly, their statements regarding the nature of teaching or features of the instructional environment would allow me to make inferences regarding the students' personal epistemologies. I was also prepared to pay attention to any possible indicants of the affective or intuitive aspects of personal epistemologies, if they were revealed in the data. Finally, the definitional and empirical divergence I found in the literature suggested significant variability in the researchers' individual stances on the nature of the construct, thus laying the ground for my own speculative thinking which was eventually stimulated as this study unfolded.

TWO

Why My Own Class?

The study examines reflective essays, written by the students in response to watching a film that is provocative in terms of possible interpretation of the encapsulated in the film events and behaviors in relation to teaching and learning. I located this study within the context of the class, which I developed and taught myself at the time, for two major reasons. The first one relates to representation of what I learned in this study and the necessity of being conscious about my role as researcher. It is important to clarify that I chose a movie "Renaissance Man" because, besides serving as a projective device for eliciting the students' personal epistemologies, it encapsulates many ideas, which are characteristic of my teaching philosophy. The act of watching and interpreting this movie became an inseparable part of a larger contextual background within which the course unfolded. Some aspects of this larger context might have affected the students' responses to this movie by fostering their epistemologies. At the same time, my role as a researcher, and my sensitivity to concerns of epistemology and ontology, becomes more visible through a description of my role as designer of the instructional environment.

The second reason is of a methodological nature. By collecting my students' responses in a regular class meeting, and as if these represented a regular classroom assignment, I presumed the possibility to trigger the students' cognitive dispositions different from those triggered in the context of a clinical interview or a direct paper-and-pencil questionnaire. The latter are far removed from contexts of learning in which epistemological dispositions are supposed to apply. In other words, in the context of my

class, I anticipated being able to draw results on personal epistemologies from the sources cognitively different, in terms of their contents and range, from those usually 'activated' when the assessment of epistemology is administered through interviews or questionnaires.

A particular effort that I pursued as teacher was promoting and prompting the students' aesthetic experiences throughout the course (I describe this effort in more detail in the next section). As researcher, I wanted to use the context of aesthetic experiences, as well as the emotionality attached to these experiences, in the assumption that these contexts are especially potent in terms of 'conditioning' (or 'activating') the students' cognitive dispositions. With the help of an accumulating effect of such contexts, I hoped to reveal a richer range of personal epistemologies at the time when the students reflect on the movie.

With these two aspects of the study in mind, I find it important to clarify my teaching stance and the contextual particulars of the instructional environment I sought to foster.

My Teaching Philosophy

Three key beliefs about the purpose of education of adult learners shape my teaching philosophy.

> In *sociological* terms, to help learners acknowledge and appreciate the unique qualities of their *Selves* as persons, citizens, and individuals capable to contribute to a societal good. In a way, any learning experience may become a civic and cross-cultural lesson as much as professional education through a continuous exploration of *Self* in relation to others and 'otherness' (new disciplinary concepts, etc.). The teacher's role is to help develop *empathetic knowing* of a new subject, idea, or relationship.

In *pedagogical* terms, to offer *intertextually rich learning environments* that would allow for both intellectual and imaginative ways of learning to play their equally important roles in disciplinary-specific domains, as well as in the broader area of skills and knowledge.

In *developmental psychological* terms, to help become cognitively flexible with the disciplinary concepts, and also be comfortable with applying these concepts across the contexts and over time. Such flexibility, in turn, becomes a driving force for the continuous and holistic personal and professional growth.

My general approach to the designing and teaching of any course emphasizes the fundamental importance of experiential knowing, for it is "through the actual experience of something that we intuitively apprehend its essence: we feel, enjoy and understand it as reality" (Fals-Borda & Rahman, 1991, p.4). To me, coming to know is possible through the act of creating *new forms*—a new understanding, a new pattern of interaction with people or materials, or a new way of relating to the world. I see a process of creating of a new form—whether by an artist or a scientist—as an aesthetic experience. In other words, we actually come to know through an aesthetic experience, with its internal coherence and a sense of fit. My efforts in designing instructional environments aim, therefore, toward creating conditions that allow for aesthetic experiences to take place.

One essential building block in creating such an instructional environment is seeking the ways to promote the development of social reliance (always context-and group-specific for each and every course), which would shape the culture of the group and condition both the individual and the collective creativity. By collective culture I mean the emergent system of values, communicative exchanges, and vocabularies that the group of participants come to recognize and accept as common within the given learning experience (or setting). Commonality in recognizing the values, communicative

exchanges, and vocabularies can emerge from the complexity of the common tasks, when each task has multiple dimensions to it (layers of the underlying themes and purposes).

Another building block of the complex instructional environment is the multiplicity of texts that the participants engage. These texts—verbal, as well as non-verbal (hypertexts, auditory, visual, etc.)—allow for various levels of intellectual intensity and demand various kinds of engagement by the participants. Over years of trials, I observed that students not simply produce their own "art" as an end product. They also find inspiration in the *content* and *context* of each project to engage into the process of further creating. From the literature on the prevalent theories of art, I have seen that "the periods of strong development of personality, or of constructive individualism have always been among the highest periods of artistic productivity" (Rank, 17). My major task as a teacher is, therefore, to reveal the cultural origins of *style* and the psychological origins of *type*[4] of the students' creations. This knowledge helps me gain ideas about the relevant ways in which I can introduce a particular disciplinary concept (in a session), or an array of such concepts within a disciplinary area (in a course or a curriculum).

The multidimensionality of tasks, as well as the diversity of the texts, introduced by the teacher or created by the students, intends to help students take a step beyond their formal college setting and reflect on their past and present learning experiences, including those in 'informal' settings. Such a step can bridge theory and practice in their

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[4] *Style* is related to the aspect of the students' work that stems from their cultural background. The students' cultural background is influenced, in part, by the culture of a specific group they belong to. Within the context of a college class, over the course of a semester, the group develops its own culture characterized by a specific vocabulary and a repertoire of possible behaviors (interpretations, reactions, ways of expressing ideas, etc.). The teacher can watch the evolution of the students' creative work, which represents their current thinking and is embedded in their cultural beliefs at the time.
Type is referring to the aspect of the students' work, which is derived from their individual personalities.

minds, as well as help gain a deeper appreciation of their own ways of learning. Students can see that their own experiences can be interpreted differently—both by themselves, over time, as they proceed from one task to another, and by others. Importantly, the students can come to appreciate the value of analyzing their own learning and to do so in the company of peers—a habit of high significance in the teaching profession. As I watch my students develop their habits of reflecting, I gain new insights on the design of instructional environments that walk us, together, through an aesthetic experience of coming to know. The more individual creations by my students force the collective "art" of the class into new paths, the more such ideas about the 'relevant' ways stimulate my thinking.

As a researcher who has learned to reflect on my own practice early in my teaching career I came to focus on the motives and processes that transform a student's creative impulse into what Otto Rank calls the "art-achievements of high aesthetic value" (Rank, 8). In other words, I want to know how to help a person reveal his or her intellectual and emotional resources in order to prompt this person to create something original—a new form of understanding, for instance. So that the person then is able to make a meaning of this creation that would enable his or her understanding of and capacity to apply a domain-specific idea or a concept. Such focus led me to the approach in eliciting personal epistemologies, which I probe in this study.

> Three important components of this course will seem unusual in terms of its structure and flow: *time, space,* and *relationships.* You might expect much of loosely structured activities, spontaneity, and movement in class that will rely on your creativity and imagination... Learning to teach demands that we surface our inner selves, study the experience of others, apply theoretical concepts to what we do, and raise questions about our current assumptions and beliefs (Course Syllabus, TE-150, Reflections on Learning, 2000).

In my sections of TE-150, 'Reflections on Learning'—an introductory course in Educational Psychology mandatory to all Teacher Education majors—I experimented with various instructional designs. Each semester, I developed a version of the course to include three important modalities through which the students could reflect on their learning experiences. These modalities include:

1) Reading of various texts—printed, video, and web-based—followed by a dramatized interpretation.
2) Autobiographical writing and periodic revision of that writing in light of the issues that rose in the students' readings, as well as their interactions.
3) Continuous situating of the disciplinary concepts introduced in class within the contexts of the students' experiences, both in and outside the classroom. Interpreting these experiences in creative ways (such as painting, drawing, sculpting, drama, movement, computer-based design, and video-production).

A series of interactive classroom events, within which the students engaged in continual acts of expressing their thinking by using multiple forms of expression, served to both introduce the theoretical conventions of Educational Psychology and surface the students' own views on the nature of learning and knowing.

How did this instruction look like on a typical day? On a typical day, we might begin by spending twenty minutes sharing our autobiographical story of the week; we might then examine some of the particulars of the learning experiences we shared—the 'What,' the 'How,' and the 'Why' of those stories. Later, we might analyze the student-created documentary of the 'learning opportunities' inside/outside the academic classroom. A typical day would also include 3-4 students in the class conducting a 'teaching session' of the topic of their interest for their classmates. I, in turn, would include among other instructional materials a hyper-media case of the students' work from their earlier projects in order to prompt a discussion and reflection. Besides revealing the multiple ways of viewing a complex phenomenon, the technology component augmented my effort to force the students to pick the facets of a concept (one that related to educational psychology) *within* the contexts of their own experience.

Students had a number of projects underway at one time. This is more difficult for some students than for others. Although it is challenging and can be confusing, it is also an inevitable *characteristic of the work of teaching*: "At all times a teacher is working on a large number of fronts: preparing for a variety of classes or subject matters, doing long-term unit planning while preparing for the next day's teaching, balancing one's own teaching goals with the new school curriculum, adjusting previous lesson plans to the needs of a new group of students, adapting to changes in school schedules, planning time to get the room arranged for the next class, while juggling a standardized test schedule and counseling a troubled student etc., etc." ((Shulman et.al., 2000). It is important, therefore, for the students to begin to reflect on their thinking in the midst of *multiple* tasks and expectations.

I have taken this approach because of my belief that prospective teachers (like prospective professionals in any field), who thoughtfully examine their own patterns of behavior, may then be receptive to thinking about alternative patterns. It is not the writing of autobiographical stories or the artistic representations that is important, it is the writing of those stories and the enhanced creativity *in the context* of learning about the nature of learning and knowledge which is important, and is seen as a critical instructional aid. Each student's creative work became a gestalt in a way—a collection of pieces revealing some pattern in his or her viewing of learning that required viewing this work as a whole. We then talked and wrote about those images of learning, trying to make sense of their subtleties. My goal here was to prompt the students' detailed descriptions of how they coped with particular contexts in which they live and learn, and the demands those contexts placed upon them. Discussions of such descriptions became part of the curriculum.

By using a combination of printed texts, oral narratives, as well as visual and kinesthetic images I hoped to free up a space, in which the imaginative and intuitive ways of knowing would be fostered and would become visible to my students. Within a relatively short duration of a course (15 weeks), I sought to help my students arrive at a greater epistemological, intrapersonal, & interpersonal level of complexity. Inviting the students' ideas and opinions, framing and analyzing of one and the same issue—nature of learning—from various perspectives, and fostering students' creativity and authorship, I sought to support my students in taking an increasingly active role in the construction of their understanding of learning and knowledge.

Conclusion

Embedded within an array of expressive and reflective experiences, the act of interpretation of an ambiguous film shown toward the end of the semester aimed to offer a space for students to provide their commentary without a direct prescription on the part of the instructor. I anticipated this commentary to shed light on the students' personal epistemologies. By learning about the range of my students' personal epistemologies I hoped to gain new cues as to how I might change the specific factors of the instructional environment in order to activate the students' own cognitive dispositions and get the students use those dispositions more reliably in class. So, I don't think I chose the topic for this study. Rather, the topic chose me when I was 'in place' for it.

THREE

Determining *'Voices'* and *'Horizons'*: Designing the Analytic Tool

This study was exploratory classroom research without a formal experimental design. I analyzed my students' essays that they wrote in response to the movie "Renaissance Man" as part of one of the regular classroom assignment. The purpose of the analysis was to look closely at a single artifact, the students' written response, and select compelling cases that reveal different ways of interpretation of the film and are suggestive of the students' personal epistemologies. The process of identifying such cases served to document the potential of using the concept of a *projective devise*. This concept implies a dual role of such a devise: (1) that of triggering certain cognitive resources allowing an individual to make sense of his or her experience with this stimulus; and (2) that of revealing the nature of those resources to the researcher. In a stringed musical instrument there is a pin that can be turned to tighten or slacken the strings so as to regulate their pitch. It forms a projection that serves as some kind of an acoustic boundary marker. By analogy, the projective devise can manipulate the interpretive process in certain ways by providing conceptual pegs that link and integrate cognitive resources, participating in the verbal and nonverbal response. By confronting individuals with the ambiguity of a theme, or topic, or characters, embedded in such a stimulus, we

can reveal the epistemic variability inferred from their responses based on the characteristics and qualities of these responses.[5]

In this chapter, I briefly introduce the plot of the movie and explain why I chose the "Renaissance Man " as a projective device. I then describe how the task was administered, as well as specify the line of my inquiry that shaped the method of analysis. I present further the initial findings, which determined the way the analysis proceeded at its later, advanced phase. Finally, I introduce four individual students' references to one and the same scene from the movie, illustrating epistemic variability that was identified at this early phase of analysis.

What is the "Real Question"?

Here is a brief synopsis of the movie plot:*

"**Hobs**—
You know what increases knowledge?
...
Increases sorrow...

Bill—
Shakespeare?

Hobs—
Bible..."

Bill Rago is a down-on-his-luck businessman who desperately takes the only job offered-teaching "thinking skills" to a group of eight underachieving army recruits. He arrives on base to find that there is no structure set up for the class. Initially, he assigns the students to write their personal stories, "Why Did You Join The Army?" without any special purpose in mind.

Something happens while he listens as the students read their stories, however. One, whose father died in Viet Nam, finishes his story almost in tears.

[5] I have not identified anywhere in the literature on research into personal epistemologies reports on the use of projective devise of any sort, including the movie. While some of the researchers report on using video in the classrooms under investigation, such use is reported to have sought to foster the students' discussion in class, not to elicit the students' epistemologies. As part of her instructional environment for teaching model enhanced science curriculum to seventh-graders, Schwarz (2002), for example, has constructed and showed in class videotape of modern uses of computer simulation models to help students identify alternative models. Her evaluation of students' epistemologies of modeling, however, took place in contexts outside the session within which the students interpreted the content of the video (pre- and post paper and pencil assessments were conducted in the beginning and the end of the term; an interview was taken several months after the curriculum and instruction ended). In addition, the video was accompanied by a set of criteria of 'good scientific models,' articulated by the teacher. These criteria set up the vocabulary quite explicitly ('accuracy,' 'plausible mechanism,' 'utility' and 'consistency') (Schwarz, 2002, p.4).

> To his surprise, Bill feels a true empathy to the young soldier. He now begins to see him, and the rest, differently, as individuals, rather than just a "ragtag bunch of underachieving misfits flunking out of basic military training". More so, Bill is coming to see his own role in the class differently. When student asked him about Hamlet, he dismisses the request, explaining that it is too complicated. The student challenges him on this- "What, I guess we're not smart enough?"-and Bill is again forced to reexamine his role, and his perceptions, in the classroom. "We're here", they say to him, "We're listening." Responding to this part request, part plea, Bill accepts the challenge to overcome the barrier of the students' 'not knowing', the total absence of their prior knowledge about Shakespeare, literature, and theater. His intuition and imagination starts working. He tries first one approach, then another, quickly discarding what does not work, spontaneously inventing his own teaching as he searches for ways to communicate to them the intricacies of Hamlet-"sex, violence, incest, madness, and murder"- lurking within the rhyme and rhythm of Shakespeare's prose. This, in turn, infects the students' imagination, things begin to click; change, in their minds (and his), is happening; learning is happening.

* The synopsis uses the text, in part, from the course web site I developed as well as from the abstract presented at: www.markrobertwahlberg.com/renaissance_man.htm

Why Renaissance Man?

I used the film "Renaissance Man" to serve as visual stimuli, the interpretation of which would present an intellectually ambiguous task. Its ambiguity is not in the absence of a single unifying narrative structure (in conventional terms), like it is the case in Fellini's films. On the contrary, the creators of the "Renaissance Man" convey the plot in a quite traditional manner—there is a chronological time-line, a core group of the same characters, and recurring locations easy to recognize. What is ambiguous is Bill Rago's teaching philosophy and the student-soldiers' learning outcomes. As spectators we might wonder: What are these outcomes and philosophy? Where do they originate? The

ambiguity of this movie stems from the *processing* of the questions like these by the spectators, rather than from the form and structure of the cinematic narrative chosen by the movie creators (compared to the form and structure in the films by Fellinni, for instance). There is no straightforward answer to these questions in the movie. Perhaps, there are as many answers as there are spectators.

Such a movie stands in contrast to the ones that students in a teacher preparation program would ordinarily watch. More likely, they would watch an excerpt showing, for instance, a 5th-grade teacher teaching a math unit, in which specific content, specific instructional strategies, and specific learning outcomes are highly predictable. In the context of a course on Educational Psychology, with its focus on the nature of knowledge and the ways in which people learn, the "Renaissance Man" creates an ambiguous intellectual task for the viewer: to decide exactly what is taught and what is learned in Bill Rago's class. The reflective writing on the ambiguous theme of teaching and learning in the "Renaissance Man" was open to the respondents' choice of form and genre. It therefore presented a loosely structured task, involving authorship of the content, form, and genre of the interpretive response.

The hypothesis that I had was that, within such a loosely structured task, the students' verbal expressions might elicit insights that are less consciously acknowledged by them. In other words, some of the revealed insights can be intuitive, rather than intellectual in nature. The respondents have to configure the film elements into a meaningful whole, in the absence of a single marking structure, which would indicate for them the qualities of behaviors and the nature of events in the film. Such a marking structure would have helped the respondents make decisions about the nature and origins

of Bill's teaching and the student-soldiers' learning, or, in other words, would have given them *entrances* and *exits* into their potential responses. It is the absence of such clear markers with regard to teaching and learning that makes this movie an intellectually ambiguous enterprise for the students to interpret. To make a sophisticated judgment—in this case, what exactly is taught and learned—some scholars argue (Arnheim, 1969, 1996; Csikszentmihalyi, 1996; Greene, 1995), requires the intuitive, rather than the intellectual, dimensions of cognitive resources to come into play. So, I chose a film with a loosely structured target theme—an almost impressionistic portrayal of 'teaching & learning'—and let my respondents choose their own writing style and genre to express their understanding of this theme. By doing so, I anticipated that some of the insights revealed might be intuitive in nature, thus illuminating the deeper, often hidden dimensions of the epistemological orientations underlying the students' responses.

Introducing the 'Invisible' Interviewer

Twenty-one digital video clips from the "Renaissance Man" were shown during a single session, in a sequence compliant with the original movie plot[6]. Before the clips were shown, I passed around the handouts with the six optional questions (Appendix I) related to the film that intended to:

1) Help students organize their thinking about what they see in the movie.

[6] I made an educational digital copy of this film (to be used in my sections of this course only). I then created a web page (Appendix II) specifically designated to this movie, which included a list of names of the excerpts available, total of 21, along with a brief summary of the focal theme of the movie. The digitized excerpts were stored on the college server as MPEG-files and were streamed directly from the server once the web page was opened and the particular clip was selected. The web page designated to the "Renaissance Man" was linked to the course web site that I developed and maintained. The clips were available to the students, particularly those who took essays home for completion after the class in which the movie was shown. Some of the students did use the clips to refresh their memories (they have mentioned this to me either via e-mail or by noting directly in the essay).

2) Serve as potential starting points for their interpretive writing.

The students were not required to use the questions. Rather, they were given the opportunity to decide for themselves about the content and the format of their written response. There were no 'norms' or expected 'right ways' for interpretation of, and writing about, the film. However, the students were asked to defend their choices of references and interpretation. My purpose in posing this request was to look for the students' selectivity patterns, and to explore the conviction with which the students' choices were made.

The list of questions included, for instance, the following one: 'What served as stimuli for the students to learn?' My purpose in posing this question was to determine, if my students could identify the turning points in the movie, in which the process of learning for the student-soldiers began. The points they chose would then reveal the particular situations, events, environments, and human behaviors/activities they identified as 'stimuli' for learning.

Another question—'What is the role of language, communication, and social interaction in the development of students' knowledge and understanding?'—intended to convey an idea of knowledge as a process and product of the social-cultural exchange within a community of learners. It is easy to see that the wording of this item makes it one of the most 'prompting' questions on the list to influence a particular kind of response. Specifically, it prompts to focus on the language and interactivity (provided that the student would have done the home readings and attended to the class discussions).

The last question on the list (#5), regarding Bill Rago's teaching philosophy, was most open to the respondents' free interpretation without imposing any specific language or conceptual hints. With the help of this question, I intended to elicit the most of the range of the students' views on teaching and learning.

The task to write an interpretive essay in response to this movie provided a contrast to a multiple-choice test taken by the students earlier in the session. This contrast meant to provide for transition to the next topic of the course—"Testing and Measurement in Student Learning". Specifically, a reference to both the multiple-choice test and the movie during the following session aimed at prompting the students' comparisons between the nature, purposes, and outcomes of the two assessment tasks as measures of learning.

Line of Inquiry

Based on the students' free-style written responses to the provocative movie, I anticipated that some claims for why specific groups of students organize their writing in specific ways could be made with regard to their personal epistemologies. My line of inquiry followed Smith and Heshusius' (1986) notion of "method as logic of justification" in which researchers make explicit the "logic" being used to construct and warrant the truth claims of their inquiries. I liken this notion to Kilbourn's (1999) concept of "self conscious method" by which I tried to establish reasoned interconnections among the various aspects of my inquiry—theoretical concepts, methodological challenges, and ways of conveying the results of the analysis.

One specific task for me as researcher was to develop concepts that qualify as personal epistemologies by grouping together a constellation of the contents of students' interpretations. Another task was to reveal the relationships among the contents of these interpretations, while attempting to capture the patterns that link to the epistemological 'resources' students' voice in their interpretive writing.

Methodologically, the analysis employed in this study is reminiscent of an interpretive approach used to analyze literary texts. In this study, the 'texts' were composed by my students in response to the movie. The analysis can be described as analogous to the kind of literary analysis that Bakhtin [1895-1975] did in his first studies of works of Dostoevsky and Tolstoy. Bakhtin's analysis proceeded by means of determining the writers' *'voices'* and *'horizons'* that expressed, he presumed, their conceptions of the world. In his theory of the utterance, Bakhtin formulates the following observation:

> The quotidian [*or everyday—shiznennoe,* O.K.] utterance endowed with signification is... composed of two parts: (1) a realized or actualized verbal part, and (2) an implied part (Vološinov/Bakhtin, 1926/1995, p. 14).

By examining every sentence in a student's written response at the lexical level—the choice of words, associations between words, how the words are used together, and organization of phrases—I attempted to uncover the *implied* nonverbal part that corresponds to the context of the enunciation. The analysis included the interpretation of the meaning of the *'pronounced'* part of the response to the 'film-interview' (the one actually articulated in the words of the essay), and the extrapolation of that meaning to

the *implied* part of the response. The extrapolation, as a higher level of my interpretation, became a kind of relating to epistemic symptomatology, to put it in medical terms, by marking the signs embedded in the semantics of each essay, and noticing relationships between them that might be suggestive of epistemological orientation. This extrapolation proceeded by means of developing a categorical schema, or rubric, which evolved in the process of my reading of the students' reflective essays. The schema stemmed from the observations made about the students' selectivity patterns, as well as the content and qualities of their written responses. The analysis of the students' written responses to the movie thus involved the following phases:

1. *Reading* the essay and making observations of the individual's selectivity patterns, as well as the content and qualities of the response.
2. *Interpretation* of the meaning that the individual makes out of the movie based on the written text of the response (defining the individual's *'voices'* and *'horizons'*).
3. *Extrapolation* of that meaning to ascertain the individual's implied epistemology (framing the emergent categories of the descriptive schema).

First Reading: "Film-Interview"

> Reading is an improvisation of connections and noticing and choices.
> /Eric Booth, *The Everyday Work of Art*/

My reading of the students' essays began in the spirit of improvisation as Eric Booth (1999) describes, connecting pieces of the essays and noticing interesting spots in them. These first improvisations shaped a lens that helped mark my initial observations.

The lens focused on two key characteristics of an individual response—(1) inclusion patterns, and (2) the content and quality of response.

In a way, the students' written responses to the film can be treated as a *'film-interview'*, which sought to elicit the students' thinking about the nature of knowledge and knowing by explicating the selective qualities of their interpretation of the movie. The interviewer role was split between the movie and myself. The students, while *watching* the movie, did not perceive it as an 'interviewer.' As to me, I was just a teacher who was going to check the students' responses for relevance with the disciplinary concepts, they expected. At the same time, the data were gathered in a way reminiscent of an interview, with the difference that the 'interviewer' remained unidentified, and, though, visible physically, was not *seen* by the respondents. In this sense, the descriptive framework used at this phase of analysis is grounded in the principles similar to those that studies employing an interview would use. The loosely structured cognitive task presented by viewing the movie, did 'interview' the students by forcing them to select and interpret certain scenes, characteristics, and behaviors, thus 'activating' their specific epistemological dispositions. In turn, I 'asked' my students the questions related to my research interest *indirectly*, as I read their essays through the lens of the following questions:

1) What are the patterns of inclusion, that is, what kinds of settings, environments, activities, or events are likely to be included in the students' selections?
2) What are the nature (contents) and the qualities of the students' interpretation of the film?

The first dimension of the film-interview—the students' selectivity patterns—was thought to identify the individual student's selection patterns, and trends that are unique to the movie "Renaissance Man" (Table 1).

Students' *Selectivity* Patterns	1. **Topic:** Which episodes do the students choose to concentrate on? 2. **Activity:** What kinds of actions and behaviors occur within the chosen episodes? 3. **Setting:** What kinds of settings, environments, or activities are likely to be included in the students' selections? 4. **Events:** Which kinds of events are included?

Table 1: Film-interview, Dimension 1: Selectivity Patterns.

The second dimension—the content and qualities of the individual student's analysis—relates to the level of synthesizing and generalizability at which the individual's intuition and intellect may currently reside. In other words, how active is an individual as a constructor of meaning. This dimension included the components shown in Table 2.

The 3d and 4th components in the '*Content & Qualities*'-dimension are adapted from Scott and associates (Scott et al, 1979) who introduced a measure of *integration*, elaborating on Harvey's (1966) *"This I believe"*-test. Harvey's test intended to identify the degree to which people base their judgments on the combination of conditional rules, rather than on a single absolute rule (Scott et. al, 1979, p. 119). A similar proposition is used by the cognitive theories of *conceptual combination*, which deal with the creative

combination of ideas to produce radically new interpretations for combinations of known concepts (e.g., palmtop computer, water shelf, angel pig) (*Media Lab Europe* research reports).

Content and ***Qualities*** of the Students' Interpretation	1. Metaphoric expression of the perception of a person, event, or setting. 2. Rearrangements made of characters' behaviors, of scenery, or of events when the particular excerpts from the film are chosen. 3. Generation of various meanings of the judgment (perception) of views about a character(s), event(s), or setting(s). 4. Simultaneous operation of alternative judgments and generation of functional relations between them.

Table 2: Film-interview, Dimension 2: The Content and Qualities of the Response.

The component *'Generation of various meanings of the judgment'* appears to be particularly useful in that it may show the number of different meanings of the judgment. The more different judgments appear, the greater is the independence of the several meanings and the higher the index of dimensionality of the overall interpretation.

I gave particular attention to metaphors in the assumption that the metaphors, encapsulated in the individual's interpretive writing, would resonate with meaning, representing at the same time an *articulated* understanding of the themes of the film, and the dominant dimension of the individual's *implied* world view. It is within this resonance that I anticipated the individual's personal epistemology would most likely be revealed.

Determining 'Voices' and 'Horizons': The Emergent Categorical Schema

Based on the selectivity patterns, as well as the content and qualities of the essays, a further interpretation of the responses—the definition of the respondents' *'voices'* and *'horizons'*—became an advanced phase of the analysis. Specifically, the primary reading of the essays showed that, while referring to the same scene when writing their reflective essays, students appeared to reveal variability of the following nature:

- Start in the same origin, that is, refer to the same scene, but end up going in different directions (use the same scene toward different end, for instance, respond to different questions).
- Develop different themes of interpretation.
- Seem to reveal epistemic variability or certain kinds of epistemic orientation.

The analysis of the essays proceeded to accomplish the following:

1. Identify *epistemic variability* across individuals within the interpretation of the same scene.
2. Document variability across the individuals by reading the whole essay in order to find evidence falsifying or corroborating with the variability identified in i.1.

At this stage of analysis, the perspective of the two epistemic world- views (Spiro et. al., 1996), and, particularly, the *Cognitive Flexibility Inventory*, became particularly helpful. This perspective takes two opposite epistemic positions as contrasting criteria (Table 3) and, therefore, is instrumental in articulating both the process and the outcome of this phase of analysis—the emergent rubric (categorical schema), which took the shape of a series of binary categories. This rubric, in turn, helped to extrapolate my sense of the

meaning that the individual students made of the movie, to their implied personal epistemologies.

Personal epistemology associated with *oversimplification of complexity* known to be related to:	Personal epistemology is characterized with features more *conducive to* the processing of *complexity*:
- Single representations - Analytic compartmentalization - Orderliness (recognizing orderly and linear sequentiality in relationships between the parts) - Intolerance of ambiguity - Rigid prescriptions from memory - Concepts detached from life experiences - Passive perception (relying on recall and reciting from an authoritative source)	- Multiple representations (using multiple explanatory frameworks; assembling partial representations to form complete accounts) - Synthetic integration of the parts (recognizing interconnectedness among the parts and patterns in relationships between the parts) - Disorderliness and heterogeneity (expects deviation from routine) - Tolerance of ambiguity - Use of pre-existing knowledge in a combinatory manner (adapting a variety of appropriate strategies to solve non-routine problems; applying disciplinary knowledge in context outside of the discipline) - Experiential tone of concepts - Self-reliance in learning

Table 3: Two Kinds of Personal Epistemologies (adapted from the *Cognitive Flexibility Inventory*, Spiro and associates, 1996).

Thus, the next steps of analysis followed as indicated below:

3. Determination of whether the identified epistemic orientation is consistent for one individual throughout his/her essay, in other words, whether the student's interpretation of the film can be described consistently with one binary category rather than the other, and which of these categories receive a greater emphasis in the data.
4. Using the binary categories that receive a greater emphasis in the data for portraying personal epistemology of respondents.

To illustrate the process of inventing the analytic tool, I will first introduce the initial analytical decisions, the first four binary categories that emerged during preliminary reading of the essays and laid the ground for the advanced phase of analysis. I will then use a series of cases to illustrate my interpretation of individual students' responses.

Epistemic Variability: First Encounters

When I first read the students' written responses to the "Renaissance Man," it appeared that the epistemic orientation of these responses could be described with the help of fundamental, bipolar dimensions—pairs of categories, whose extreme values are placed at the opposite poles of a continuum. Thus, the following four descriptive *binary categories* emerged early in the analysis:

1) Learning/knowing is viewed as *teacher-centered / Student-centered*

2) Learning/knowing is viewed as *closed (determined) / opened (undetermined)*

3) Learning/knowing implies *organistic causality / mechanistic causality*

4) Knowing is viewed as *'cold-minded' (merely intellectual) reasoning / affective/intuitive/aesthetic*

Rather than providing single-sentence quotes for illustrating definitions in this section, I incorporated examples for the above categories within the cases in the following sections where I analyze and discuss individual student's responses. Most of the categorical attribution is done within specific semantic contexts of each student's essay, and often involved the consideration of more than a single statement.

1) *Teacher-centered* versus *student-centered*

A *teacher-centered* view of learning (knowing) implies the person's understanding of the teacher as a locus of students' learning. Such an understanding is likely to imply learning as a process of transmission of information directly from the teacher—as a carrier of specific information—to the students who play a passive role as recipients. The center of initiative is the teacher. The meaning of what it is that is being learned resides with the teacher(s), and what counts as knowledge (truth) is sanctioned by the teacher(s). The source of knowledge is perceived as located in the teacher(s) who serve as the carrier of information and the transmitter of rules.

A *student-centered* view of learning (knowing) implies the person's understanding of learning as a process in which learners themselves take the initiative to explore opportunities and take responsibility for their own learning. The teacher's role is understood as that of a facilitator of the learners' self-identified activities. The center of initiative is the learner. The learner is also perceived as a possible source of knowledge. In other words, some authority for knowledge rests with the learner.

2) *Closed (determined)* versus *open (undetermined)*

A *closed* view of learning (knowing) implies an epistemic orientation that is characterized by intolerance of ambiguity; that is, a response generated by a *single* fixed rule, implying only limited or no alternative interpretations of an event, behavior, environmental feature, or phenomenon. Even if a couple of alternatives are implied in such a response, there is a sense of orderliness and rigidity to interpretation. Relationships can be acknowledged, but are seen as a linear sequence of events, behaviors, environmental features, or phenomena. The rule is implied as describable in finite terms and predetermined by an authority, whose existence is acknowledged and whose dominating role is unquestioned.

An *open* view of learning (knowing) implies an epistemic orientation of an individual's response that acknowledges the existence of *alternative perceptions,* and the ability to identify relations between alternate ways of viewing the world. Such an epistemic orientation supports the understanding of learning as a process of discovery. It admits multiple explanatory frameworks and allows for configuring partial representations to form complete accounts. An individual revealing such an epistemic orientation is likely to produce relativistic statements as opposed to absolutistic. Such relativistic statements would likely imply the acceptance of the *interconnectedness* and *irregularity* between events, behaviors, environmental features, or phenomena. Rudolf Arnheim (1996) gives the description of Wertheimer's study, which helps exemplify this category:

> In Wertheimer's study, the move from the original uniqueness of the square to the endless variety of rectangles is the first step toward understanding the structure of the parallelogram. It is indeed a "move" in that it comes about by stretching or

> squeezing of the original object. It is a deformation of the original object. I consider it crucially important for the psychology of problem solving that the transition from one shape to the next be seen not only simply as a sequence of static entities but as a dynamic deformation of the matrix into its variation (p. 176).

3) *Mechanistic causality* versus *organistic causality*

Learning (knowing) implies mechanistic causality. Such an epistemic orientation is likely to imply the causal relationships between events, behaviors, environmental features, or phenomena as *linear* and *predictable* with high degree of certainty: all one way *or* the other. This orientation implies an understanding of learning (knowing) and development as a linear process, in which mutual effects are compartmentalized.

Organistic causality implies a more holistic view of the relationships between events, behaviors, environmental features, or phenomena. This category is characteristic of an understanding of learning (knowing) and development as rather *a web* of probabilistic relationships. It implies synthetic integration, as well as *simultaneous* interconnectedness and interdependency among the events, behaviors, environmental features, or phenomena. If organistic causality is characteristic of an individual's personal epistemology, we anticipate to find in this individual's interpretation the recognition of a pattern between the relationships, rather than a linear sequence—*a configural pattern*, which is likely to be revealed through an image (a picture, for instance).

4) *Knowing is viewed as 'Cold-minded'* (merely intellectual) *reasoning* versus *Affective / Intuitive / Aesthetic*

'Cold-mind' knowing or *learning* is a category describing the epistemic orientation of an individual who believes that learning is purely an intellectual enterprise, and that

justifications for personal beliefs should be *reasoned.* Such persons are unlikely to attribute any real significance to the roles of emotionality and intuition in the process of learning (coming to know). Nor do they acknowledge the value of learning simply for the sake of learning. They believe that learning is driven by the predicted outcomes, and their accounts of reality are factual and objective.

I have described the opposite pole of this binary category as a family of related descriptions for the nature of knowing (or coming to know): *Affective / Intuitive / Aesthetic Knowing.* This family-category describes the epistemic orientation of an individual capable of taking into account the specific qualities of a learning experience, and able to acknowledge ways of knowing other than intellectual reasoning. This pole attends, particularly, to the *emotionality* attached to learning experiences and the processes of meaning making.

This epistemic orientation is likely to combine with the perception of knowledge in the form of *intuition.* An individual with such an epistemic orientation accepts the unreasoned, but rather *'sensed'* (i.e., felt, seen, heard, imagined) justification for his/her personal beliefs and understandings. Such individuals would be attentive to sensory, as well as intellectual, signals, such as the feelings incurred by the reading of a poem, and would draw upon these feelings to make meaning of the poem. Images generated during the reading of the poem would be acknowledged as knowledge, though in its more subtle and complicated form.

An *aesthetic* dimension of this epistemic orientation implies an individual's capability to acquire new *vocabulary* (or define a new vocabulary) in the form of *actions* (rather than words, or any symbols). The process of operating with symbols, if triggered

by wonder and imagination (intuitive knowing), becomes a process of creating new *forms* shaped by words, movements, sounds, colors, etc. This process constitutes a human activity that has an internally coherent purpose and implies the acceptance of the opposites. The process of creating a new form, as a means for acquiring a new vocabulary, implies the search to satisfy meaning and, perhaps, even the pleasure in combining the opposites. In this sense, this process serves the purpose of learning for its own sake. In other words, the process of creating a new form of (understanding) involves what Eli Siegel (1965) calls "the co-existing and constantly conflicting drives"—such as *this* and *that*, *here* and *there*, *subjective* and *objective*. Finally, the aesthetic orientation of personal epistemology implies the ontological concern with, and the acceptance of, *what exists*, when the parts of the whole (this and that, here and there, subjective and objective) are inseparable and essential.[7]

Given the limited scale of this study, I kept this family of three related categories as an inseparable, single pole within the binary category, opposite to the purely intellectual, *'cold minded'* reasoning. A finer discrimination among them should be made in future studies.

It is important to specify that by 'binary' I am not referring to the idea that epistemological orientation resides somewhere on a unilateral (unidimensional)

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[7] We can find examples of such ontological attitude in Buber's *'I-Thou'* ('I-World') word pair, or Bakhtin's *'self-in-other/other-in-self'* relationship. Both of these pairs do not state something that might exist outside them. By being spoken such a pair establishes a mode of existence—*'twofold'* [Buber, 1970, p. 53], with the conflict between self and other, or 'the Self and the World' conflict, also described by Campbell, Read, Siegel, and Turner. Eli Siegel (1965) defines such conflict as 'the *subject* and *object* conflict' as there are two drives in every person: one is directed inward, to please and take care of the self, while the other is directed outwards to reach out for others. To Siegel, these drives have their 'likenesses in an artistic activity,' within which an artist would not want to deny either of these drives, 'for each is essential; each has its necessity; even its inevitability' (1965, p.11).

continuum, inhabiting either of the 'ends.' 'Binary' refers rather to the dualistic nature of the ongoing conflict within one's mind as described above. Interestingly, in addition to the two opposite 'poles' of a binary category, some students' written responses lead me to distinguish an adaptive form of the category, a *'hybrid,'* in which both binary oppositions are present in one individual's interpretation. Examples at the end of this chapter will illustrate how the descriptive binary categories revealed themselves during my initial reading of the students' reflective essays.

Examples of Epistemic Variability

I approached the analysis of the students' written responses to the "Renaissance Man" in two different ways: (1) by completing across-the-students analysis for one and the same scene, and (2) applying the categorical schema to the entire essay of an individual student. The most revealing cases are used to illustrate these two approaches to analysis in this and the following chapters. The four examples below illustrate 'across-the-students'-analysis for the same scene and intend to show how the findings can be described using the pairs of categories introduced initially.[8] I will show how these initial categories, applied within the context of a particular movie scene, can suggest the epistemological variability among the students' responses.

To demonstrate epistemic variability across the individual students' responses, I selected one of the scenes that more than one third of the students referred to as they wrote their interpretive responses. This scene, labeled by me as "Rap," shows how Bill

[8] In this chapter, I illustrate three of the four initial binary categories. The forth binary category, "Learning viewed as *'cold-minded'* versus *aesthetic/affective/intuitive,*" will be illustrated in the next chapter.

Rago's student-soldiers surprise him one day with a theatricalized performance based on the sense that they made of Shakespeare's 'Hamlet.' It became an expressive representation, within which the entire group of students danced-out and chanted the '*To be or not to be*'-monologue in the rhythm of a rap-step. The following four excerpts from the students' reflective essays are all examples of the students' reference to this scene.

Case 1: Irene[9]

> Irene refers to the scene "Rap" when answering Question #1[10]:
>
> At first when he brings Hamlet into the classroom he has the students sit in a typical classroom setting in a circle and discuss. Once the students were interested *he allowed them to express themselves* through rap music and dance.
>
> [*Italics* added to emphasize the imposition of the teacher's authority implied in Irene's choice of the verb]

The word *allow* ("he *allowed* them to express themselves") seems to emphasize strongly Irene's assumption about the role of the teacher in the students' learning: The teacher initiates and orchestrates all activities in the classroom in a highly authoritative way. This response thus represents an example of a *teacher-centered* epistemological orientation. Although the instructor's question #1 prompts the respondent to talk more from the teacher's perspective (or *about* the teacher) rather than the students', it appears that this response is generated by a single fixed rule of the teacher's authoritative control, and does not consider any alternative interpretation.

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[9] For the purpose of anonymity, I am using the students' pseudonyms.

[10] Question1 from the instructor's list: What role(s) does the teacher play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (teacher's behaviors) from the movie.

Such reading of Irene's response to the question seems even more convincing due to her obvious misinterpretation of the original scene—the teacher did not 'allow' the students 'to express themselves through rap and dance.' Instead, the students themselves initiated and re-enacted this dance much to his surprise. Further, a classroom setting with students seated in a circle, according to the authors of the film, is not at all 'typical.' It was rather the teacher's intuition that lead him to re-arrange the usual row-by-row spatial arrangement of the desks into a circle (so, that the students face each other as the actors on the stage). Perhaps, Irene associates this re-arrangement with her own experience of a college student, where many instructors in Teacher Education classes often arrange students in small groups working in circles.

Case 2: Tracey

In the following two excerpts, Tracey does not refer to any specific question from the instructor's list. She wrote an essay according to her own plan, swaying from one point in time to another to briefly show the evolution of attitudes and behaviors for both the teacher and the student-soldiers. Tracey refers to the same clip twice in her essay. First, when making the following statement:

> As learners the students remember Shakespeare better if it is told to them in a way they can relate to. Rago has them act out the plays and the students make up a rap/song to remember Hamlet and Shakespeare.[11]

This is another example of a *teacher-centered* epistemological orientation. The words "Shakespeare ... *told* to them" indicate Tracey's anticipation of the teacher interpreting

[11] I am assuming that the response Tracey is giving here might have been prompted by the question #3[11] from the instructor's list, "Describe the language use in the scenes observed: the nature of the communicative situations and the characteristics of language used by both the teacher and the students."

the literary piece *for* students, so that the students "remember", that is, receive and hold to the teacher's interpretation as a fixed and unquestionable postulate. While shifting the center of initiative toward the students to the extent of 'making up a song', Tracey retains the assumption that the ultimate underlining role of the students is 'to remember' the teacher's interpretation.

Tracey refers indirectly to the same scene for the second time when describing the evolution of students' attitudes:

> Soon the students were awaiting the next scene; the men even wanted to play the role of women. One day as Bill entered class his students were dancing and singing in their *own beats*. They then continue *to interpret and narrate Hamlet* through their singing and dancing. This allowed the teacher to understand and see where his students were coming from. This also showed that the students understood the material so well they were able to reproduce it in their own way. The students had to work together without Bill *and create their own learning and teaching environment.*
>
> [*Italics* added to emphasize the student's use of active verbs]

In describing the students, Tracey uses exclusively active verbs—they were *'awaiting'*, *'wanted to play'*; *'were dancing and singing.'* The students then 'continue to interpret and narrate Hamlet' in *'their own beats'* and, finally, by co-operating with each other, *'create their own learning and teaching environment.'* The strong emphasis on the students' initiative allows me to describe this passage as epistemically *student-centered*, that is, implying that the students are actively construing their learning experiences and creating their own meaning ('their own beats').

Within the same passage, however, the meaning to be constructed by the students gets enveloped at times by the teacher's interpretation of the literary piece: "... the students understood the material..." Tracey anticipates that the students can come up with

a good match to the teacher's interpretation—"the students understood the material so *well.*" More so, the students can 'reproduce' the teacher's interpretation, '*in their own way.*' In this response, we see the blurring of the boundaries between the meaning transmitted and the meaning self-construed. In other words, the source of knowledge is not clearly determined, or, to put it differently, in her understanding of knowledge, Tracey allows for both sources: the teacher and the learner. This passage is, therefore, suggestive of one more epistemic orientation—*openness*, admitting its author's expectation that some pre-requisite for learning outcomes exists.

While the *student-centeredness* appearing in this passage is very clearly expressed, there is also a transition toward the teacher—the student-soldiers' interpretation allowed the teacher to understand his students' backgrounds—suggestive of the assumption about the teacher re-gaining his initiative.

Case 3: Sylvia

Though not referring directly to the instructor's questions, Sylvia chooses to refer to the same scene:

> They were not only learning, but comprehending and *translating* what they learned in to their *own language*. The kids began to read Shakespeare in the form of *rap, their form of language*. This was a distinct example of a different representation of what content was learned. By acting out these specific characters, they could relate to the language even more because this was authentic testing - where the skills and abilities learned are applied to real-life situations (Woolfolk, pg. 568[12])...
>
> [*Italics* added to stress semantic emphasis in Sylvia's interpretation of the episode][13]

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[12] The pages that some of the students refer to in their essays are taken from the course textbook by Anita Woolwolk, Educational Psychology, 1999.

[13] Sylvia is sequencing her line of response in a way, as if she is answering Q.3 &4. Direct references to the word 'language' support such attribution. Q.4 from the instructor's list asks: What kinds of narratives do students tell in class? How do those relate to their backgrounds? How do those relate to their interaction later in the course?

Sylvia's interpretation in this excerpt can be described as *student-centered.* Like Tracey in the previous passage, Sylvia uses active verbs when describing the students' behaviors, although she goes a little further—beyond pure description to interpretation of those behaviors. The verb *'translating'* suggests her recognition of students as being the locus of initiative within the act of meaning making.

This reference also seems to be suggestive of another category for describing its epistemic orientation—*'openness.'* Sylvia recognizes the students' capacity to use their own perceptive repertoires to make meaning of their experience—'Students began to read Shakespeare in...*their own language*'. By taking such students' capacity into account, Sylvia reveals her predisposition toward acknowledging the students as meaning makers. In other words, she is open to the consideration of a learner as a legible locus of learning (or source of knowledge) as an alternative to the teacher as a locus of knowledge.

Further, in the same passage, Sylvia points to the fact that the students were using different forms of representation of what they know. She recognizes the student-initiated re-enactment of 'Hamlet' (in the form of a rap-dance) as an *'authentic test'* of their abilities, while seeing the context in which their abilities were self-expressed as a *'real-life situation.'* Though, this language is borrowed by Sylvia from the course textbook, her reference appears quite adequate in the context of this passage. She also notices the relationship between the learners' perceptive repertoire ('their own language') and the way they choose to represent 'the content learned.' What this reveals is that Sylvia believes there are more than one way to test what gets learned, as well as there are different ways in which the meaning of what gets learned can be revealed by the learner.

Finally, while referring to this scene, Sylvia produces some causal statements—such as the one regarding the relationship between the kind of stories that the students tell at the beginning of the film, and the nature of their interaction later in the plot:

> ... These *narratives relate to their interaction* later in the course...
> They begin to learn from one another from their interpretations of Hamlet and *rapping together as one group.*
> [*Italics* added to stress the relational character of this interpretation.]

Here, Sylvia integrates the alternative sources of knowledge: learning from peers, learning from the individual exposure to a literary piece, and learning from the social reliance of a group. It appears that she believes that the meaning made by the students from their encounter of "Hamlet" stems from all three. In this sense, the third category—*organistic causality*—contributes to the description of the epistemic orientation revealed by Sylvia's response.

Case 4: George

George referes to the same scene[14], acknowledging the role of the experiences that student-soldiers have had. In his perception, the experience 'shapes' an individual:

> Bill's interest in their potential encouraged them that their experiences have shaped them into the greater individuals they will and are becoming to be...

In the conclusion of the same passage, George returns to the idea of 'shaping' the individual:

[14] Though George gives no reference to a specific question from the instructor's list, he begins his passage with a statement, which makes me believe that his response was probably prompted by the Question #5: How does Bill Rago deal with the students' discouraged confidence and willingness to learn? What served as stimuli for the students to learn?

> ..."To be or not to be" is Bill's goal of which he wants the students to focus on the value of their lives. Bill wants to emphasize that we have choices in our lives that will dictate how they turn out.

The influence of the schooling experience in the past is responsible for the students' present placement in the army:

> It is as if their somewhat *"uneducated" background is the reason* they are qualified for the army...

The nature of the students' current experiences in the army—a recurrent failure in almost all types of military training—is in compliance with the history of their earlier development. I see this reasoning as an example of an admitted causal relationship with the internal unfolding logic, which assumes an organistic rather than mechanistic causality. My interpretation of this passage, thus, suggests a sense of *organistic causality* being present in George's epistemic orientation. Further, the whole passage (displayed in full below) appears to be written more from the perspective of the teacher's initiative, which also leads me to describe this passage as epistemically *teacher-centered.*

> Bill's interest in their potential encouraged them that their experiences have shaped them into the greater individuals they will and are becoming to be...
> It is as if their somewhat "uneducated" background is the reason they are qualified for the army...
> Bill worked very hard to make learning English applicable to their everyday lives. Hamlet reflected practical *everyday knowledge about life, death, and love*. The students' response is conditioned, but is positive, especially when they are rapping a song about Hamlet's "*To be or not to be*" quote. "To be or not to be" is Bill's goal of which he wants the students to focus on the value of their lives. Bill wants to emphasize that we have choices in our lives that will dictate how they turn out.
> [*Italics* added to emphasize George's interpretation of the teacher's role in the movie]

It is the teacher who "works hard" to encourage the students, and to relate English to their everyday lives. It is *his* "goal" to help the students acknowledge "the value of their lives." The students are portrayed in a more passive role, though they do respond to the teacher's efforts.

Finally, George makes an interesting connection between the meaning made by the students of the class—implied by his emphasis on the students' choice of the quote "*To be or not to be*"—and the teacher's goal. George's elaboration on the teacher's goal, "Bill wants to emphasize that we have choices in our lives that will dictate how they turn out," seems to imply his recognition of alternate perceptions of self-worth. From the point of view of personal epistemology, this statement suggests that George is likely to be open to alternate ways of viewing the world. Hence, another category—*openness*—also appears to be relevant for describing his epistemic orientation.

Conclusion

The four examples of the students' reference to the same scene illustrate the process by which three of the first four binary categories were revealed. We see how, within the context of the frequently referenced scene, a wording of the responses (whether direct or implicit) suggests certain types of descriptive categories. Thus, a direct response to a teacher-related question suggests *'teacher-centered'* category for describing epistemological orientation of this response. We also observe how students might have interpreted the various 'languages' used by the student-soldiers in the movie in such a way that indicated the respondent's perspectives of learners as meaning makers, hence, suggestive of 'student-centeredness' of this interpretation. The relationships between the

linguistic contexts of the students' responses in another case revealed a blurring of the boundaries between the meaning transmitted and the meaning self-construed, suggesting, to some degree, the view of learning as an *open* process. Apparently, the same case (Sam's) suggests some possibility for deviation of the '*teacher-centered / student-centered*' category between its polarities—a first indicator of the ambivalent epistemological behavior. I will illustrate this phenomenon in more detail in the next chapter, and then return to it, again, in Chapter 5. In George's case, the causal relationships between the soldiers' experiences in the army and their childhood and adolescent experiences, led to the description of the underlying epistemological orientation as implying '*organistic causality*,' that is, viewing learning (or meaning making) as integrating sources of knowing. We also saw how the same response (George's) can incorporate indicants of epistemological orientations as '*teacher-centered*,' implying '*organistic causality*,' and '*open*.'

At this stage, I had enough food for thought to move on to reading all other students' essays using the first four descriptive binary categories as lenses for my analysis. In the next chapter, I will proceed with the cases that illustrate the advanced phase of the analysis. Specifically, I will show how the newly emergent categorical schema has been applied to reading the entire essay of an individual student.

FOUR

'Voices' Interpreted: Semantic Extrapolations

> ...The students prompted the teacher to teach them the Bard's plays, and they were very motivated to learn because this is an example of self-determination on the part of the class...(Eli)
>
> ...His students learned, because they were inspired to "feel it"—not just do it. (Hannah)
>
> ...Hamlet began to serve as a form of communication that both Bill and the students were able to relate to. It was a communication bridge that aided as stimuli for learning... (Shelley)
>
> ...The students had to work together without Bill and create their own learning and teaching environment... May be now the General will want to pick up "Hamlet"... (Tracey)
>
> ...To survive throughout life is to take leaps and hurdles. The video demonstrated through the military training the hardships by hurdling over various objects to reach a destination, the other side. It is the same way with your mind, to learn. (Karen)
>
> (Excerpts from the students' essays)

In this chapter, I use excerpts from the individual students' essays to illustrate how, at the advanced stage of analysis, the students' interpretations of the movie led me to make some conclusions about the kinds of epistemological orientations their responses suggest. The 'voices' and 'horizons' of my students, once I defined these in the students' written responses, were then extrapolated, through my inferences into semantic relationships and philosophical propositions, to the descriptions of epistemological orientations.

Advanced Stages of Analysis

In reality, there has not been a clear-cut edge between the initial and the advanced stages of analysis. I have been reading and re-reading the students' written responses, essay by essay. As I read, I wrote long notes to myself for each of the essays. These notes became descriptive cases of my observations, filled with various attempts to affix codes to the individual observations, as well as remarks regarding similar students' phrases, relationships between the statements, patterns in referencing scenes and characters in the movie, and themes the students developed in their essays. As in many case studies, I was tracing and analyzing the 'events' happening in my own observations, both within an individual essay and across the essays. Such 'events' might have appeared in the form of the students' statements that did not seem to match any of the descriptive categories within the four initial ones. Or I would come across a writing habit, which puzzled me as a peculiar challenge in interpretation of the response. Or the references to the movie would be presented in a way that lead me to think of new, additional lenses for analysis I might apply to the rest of the essays. Thus, the analysis became an iterative process, open to discoveries—whether methodological, semantic, or philosophical—and following a somewhat cyclical pattern of 'fever and chills, ' as Robert Yin (1994) puts it, sometimes rising to enlightening points and sometimes falling into a 'false tranquility' (p. 29). At this point, my purpose was not so much to explain my observations (the students' statements, or writing habits, or themes) as to determine whether they followed similar courses (Yin, 1994). In other words, the ongoing, evolutionary analysis I undertook adopted new categories as I continued investigation further, case by case. The unfolding of these cases—cases of my own, interpretative experience as I look at it from a

methodological perspective—suggested a two-stage logic for a more elaborate analysis of the data I should follow after having completed the preliminary readings of the essays.

First, I had to begin the examination of the students' reflective essays, based on the first four binary categories that were introduced at the preliminary stage of analysis, while taking into consideration new categories that emerged as this examination proceeded. Then I had to revise all students' essays based on the extended list of the descriptive binary categories to check for additional support for certain orientations of the students' personal epistemologies. This two-stage advanced analysis addressed the following questions: *Do the four original binary categories work when applied to the entire text of the essay? What other kinds of categories, that can be suggestive of certain dimensions of personal epistemologies, are likely to be revealed in the students' essays?*

The sections that follow illustrate the 'cross-case' analysis—the findings stemming from the analysis of individual students' essays (within-the-essay analysis resulting in individual cases of my observations) and compared across the cases (my observations from various essays). In addition to the descriptive categories that suggested certain epistemological orientations of responses, the sections below also illustrate the very process by which I was making inferences, taking these inferences to higher levels as more evidence arose from different aspects of analysis. These illustrations are to underscore, again, one of the tasks of this dissertation. While allowing for an evolutionary approach to analysis, this study was intended to prompt a fruitful discussion around the challenges that the use of the proposed projective device may cause and, therefore, require attention in the future studies.

Testing the Four Original Binary Categories: Do They Work?

Yes, it turned out that they do. Here is an example of the analysis of one student's essay, in which a complete text was examined, as opposed to one selected reference (such as the scene in the previous chapter).

Eli writes his response to the movie as an essay, organizing it rather loosely according to the questions (he actually numerates his paragraphs by a corresponding question number). Thus, the first paragraph of Eli's essay combines his response to the first two questions suggested in the instructor's list:

> (1&2) The film "Renaissance Man" shows the evolution of a teacher as he learns how to relate to and instruct his students. Bill Rago did not intend on becoming an educator and at first he seems lost in the classroom. At first, Bill expects very little of his students, which could have led to a self-fulfilling prophecy. A self-fulfilling prophecy is when a student does not do well simply because his superiors do not expect him to (Woolfolk, 421). As a Teacher, Mr. Rago is lost because he does not see improvement in the soldiers' skills and therefore is playing more the role of a baby-sitter, but when he discovers that he might be able to teach his students Shakespeare, he becomes motivated. The students prompted the teacher to teach them the Bard's plays, and they were very motivated to learn because this is an example of self-determination on the part of the class (Woolfolk, 385).

While posing rather generalized statements regarding Bill Rago's role as a teacher, in the beginning and the end of the film, this combined answer to the first two questions implies reference to the scene 'We're here, we're listening.' Such a reference can be seen in Eli's choice of the active verbs, indicating the dramatic changes in characters' perceptions and/or behaviors. Thus, the verb "prompted" is used to inform the reader about the initiative on the part of the students: The students attempted to challenge the teacher to

quit his low expectations of their learning capacities—an effort symbolized in the scene with Hobbs: "Teach us, teach... We're here, we're listening'. At the same time, the verb "discovered" is used to describe the change in the teacher's thinking about his students' learning capacities. So do the verbs "finds out", "senses", and "realizes" (the latter enhanced by an adverb "once") in the paragraph, which Eli marks as a response to question # 5 later in his essay:

> (5) As I mentioned before, Bill Rago really begins to instruct his students when he finds out that they were interested in Shakespeare. Once he senses that they might be interested, he plays on that and piques their interest. He describes the twisted plot of Hamlet and gets the students motivated. Once he realizes that he is going to teach them Shakespeare, he then assigns roles and has the class work together to explore the literature.

We can point out several observations important for understanding the epistemic orientation of Eli's response to the film. First, Eli's response appears to imply rather a *teacher-centered* epistemic orientation. Eli focuses on the role of the teacher as embedded in Bill's expectations of what the students-soldiers are capable of as learners. He describes Bill Rago's expectations early in the film as that of *"a baby-sitter"*—the one who does not assume any active role or initiative in his ward-ship. He then suggests that such distrust in the students' capacities on the part of the teacher is caused by their own performance. By explaining that the teacher *'does not see improvement in the soldiers' skills'*, Eli, we can assume, might be pointing at the lack of the students' motivation to engage themselves in the classroom activity (so that the teacher would 'see' their effort or interest in learning). Though in the end of this paragraph, Eli points to the students' initiative to 'challenge' their teacher and their strong 'motivation to learn,' it is

the teacher who appears to be in charge of 'teach[ing] them the Bard's play': 'He describes the twisted plot of Hamlet'; 'assigns roles', and 'has the class work together...' Such interpretation seems to assign privilege primarily to the teacher's role as a locus of control within this episode.

The interchange between the roles of the teacher and the students described in the previous paragraph brought about another observation related to the *openness* of the epistemic epistemology implied by this response: The students' passiveness in the beginning of the class lowers the teacher's expectations of their capabilities. On the other hand, the teacher's low expectations of the students' learning capacities and his refusal to read Shakespeare to them, prompt the students to strike back, to challenge his assumptions, convincing him to begin to 'teach them the Bard's plays', or 'teach them Shakespeare'.[15] The cycle of interaction between the teacher's and the students' motivation to teach / to learn gets back to the teacher, who, 'once he realizes' that the students *are* interested, 'becomes motivated': 'He describes the twisted plot of Hamlet'; 'assigns roles', and 'has the class work together.' Thus, the interaction between the teacher's and the students' roles in Eli's writing seems to indicate that Eli is likely to admit the developmental, interchangeable nature of such interaction. In other words, Eli seems to admit that for learning to occur, both parties should take initiative to explore opportunities and take responsibility—perhaps, in turns—in order to become motivated to engage the learning activity, that is, take responsibility for their own learning. It

[15] In the context of this film, a phrase 'Teaching Shakespeare' might mean to teach at a higher level of intellectual complexity, as opposed to asking students to read 'something' and then re-tell during the next class meeting. In the film, those choices of 'something-to-read' appeared to be funky magazines, street-popular, easy-to-digest types of publications, which the soldiers selected for their first assignment.

appears in Eli's writing that the center of the learning activity is the learner and that the process of learning is not fixed, but evolving. So are the roles of the learners—both of the teacher and the students. For Eli, the teacher acts as a learner as well as his students. Both the teacher and the students 'take turns' in the process of learning as actors who's roles are changing as the context changes. This leads me to describe the epistemic orientation of this response as *open* to change, to variations of roles and perceptions.

A third observation relates to the internal logic unfolding within the interaction of the teacher's and the students' roles. The students do not show their interest in engaging in the class activities (the teacher *' does not see improvement in the soldiers' skills')*; so the teacher has low expectations of the students' reasoning abilities ('Bill expects very little of his students'). The students, therefore, are prompted to challenge such low expectations of them and, in their turn, enhance the teacher's motivation to *'teach them the Bard's play,'* and so on. This is an ongoing, continuous process of development for both parties—the teacher and his students. Both the teacher and the students are on the journey of discovering new understandings about each other, and by virtue of such discoveries, engage more and more in depth into interaction with the Shakespeare's text. Thus, the teacher's and the students' individual journeys become inseparable parts of the same phenomenon—the evolution of personal understandings in the company of others.

Further, according to Eli's response, the 'turns' in the change in mutual understandings of both parties do not follow a pre-determined pattern, but rather imply interconnectedness as well as interdependency among them. We can trace such 'turns' regarding both the points in time at which they take place, and the behaviors of the

teacher and the students when the 'turns' occur. Therefore, this observation allows us to use the third category—*organistic causality*—to describe the epistemic orientation of Eli's response.

Finally, one more interesting observation can be made when Eli describes a dramatic change in the teacher's motivation at the moment when the teacher engages his students in discourse around Shakespeare. Eli points to the intuitive nature of the teacher's 'discovery': 'Once he *senses* that they might be interested...' Bill Rago didn't 'decide', didn't 'thought', he 'sensed', that is came to know about his students' capabilities not by way of an intellectual reasoning only, but rather through attending to his feelings. Eli's response serves as an example of an epistemic orientation, conducive to accepting unreasoned, but rather 'sensed' justification for the individual's beliefs. Earlier, I have described this category of epistemic orientation as *intuitive*.

I have illustrated thus far how, by reading the entire text of an individual student's essay, I was able to test all four of the originally introduced binary categories. The analysis of Eli's essay suggested the following dimensions of epistemological orientation: teacher-centeredness, openness, organistic causality, and intuitive knowing.

Introducing New Candidate Dimensions for Analysis

Do the four original binary categories build a sufficient descriptive schema?—I asked myself when turning to the entire text of a student's essay. No, it is not the case. The 'within-the-essay' analysis invites us to consider a series of new candidates useful for making inferences regarding epistemological orientations of responses. In this section,

I am using two students' essays as particularly revealing cases for illustrating the emergence of the following new candidate dimensions for analysis:

a) 'Impetus for learning is internal' versus *'Impetus for learning is external'*

b) 'Learning is simple' versus *'Learning is complex'*

c) 'Learning is active' versus *'Learning is passive'*

d) 'Learning is individual' versus *'Learning is social'*

e) 'Knowing is essentialist' versus *'Knowing is particularistic'*

a) Impetus for learning: On the essence of meaning making

> ...Renaissance Man is a movie that explores the areas of learning among students and a teacher who have seem to given up on education. Bill, played by Danny Devito, is a businessman down on his luck and takes the army teaching position because he has no other alternatives. He is clearly extrinsically motivated (373) because he basically is doing it for income. During the beginning, Bill goes through the motions of running the classroom, and doesn't seem to care if the students gain anything or not. But as the class continues, he starts to connect with his students, realizing that they've never been given a fair shot at learning. He realizes this when they read there "Why I Joined the Army" essays. After hearing their experiences, his motivation turns from extrinsic to intrinsic (374). He is now motivated to get his students to not only learn, but to prove to themselves that they are not dumb. His reward for teaching becomes the growth and potential that his students can fulfill... (Excerpt from John's essay, likely prompted by the first question on the instructor's list[16]).

John's essay revealed a sound emphasis on motivational issues of learning and teaching that suggested a new candidate dimension for describing epistemological orientation. I called it *Impetus for learning.* While most educational research separates constructs of motivation (volitional resources enabling an inducement to an act) and

[16] Q1: What role(s) does the teacher play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (teacher's behaviors) from the movie.

learning (cognitive resources enabling acquisition and application of knowledge), I found the way in which students use the word 'motivation' linked to their epistemological orientations. John's essay allows me to illustrate this observation.

The excerpt above emphasizes motivation of the teacher that changes from the extrinsic to intrinsic mode. The cadence of his logic describing the changes in the teacher's motivation made me think first of Schommer's (1992) dimensions "learning is fast" or "learning is automatic." The teacher's extrinsic motivation swiftly turns into the intrinsic mode right 'after hearing the [students'] experiences.' Even though limited in description by the length of a very brief essay, such logic sounds, as if John is saying: "The right (good) teaching depends on the right motivation." Where does this 'good teaching' with 'right motivation' come from? A little later in this same essay, we come across the statements that seem somewhat suggestive of John's tacit perception of the idea that a 'good' teaching is driven by 'extrinsic motivation.'

> They [the students—*OK*] could accomplish whatever they could, but they didn't know that and that is what Bill pointed out. He taught them that learning isn't the hard part... I would classify Bill Rago as a teacher under Vygotsky's Sociocultural Perspective (44). Bill lead the students, but more as guided discovery than just shoving info down their throats. He led them to the path of learning from each other... The students talked, "rapped", and learned together as a whole. They all benefited from each other, being led by Billy Boy. This movie emphasized for me the point that cooperative learning can really help students of all sorts, but especially the slower students. Working together as a team makes the students feel important and gives meaning to the word learning...

The excerpt above portrays the teacher as if it is rather his duty to get the students to do whatever they could. The teacher had to tell the students that they have to do it, because he had to make them "feel important," which seems to have more to do with the

students' confidence. As good as the job of improving the students' confidence might be, it appears that for Bill to have the 'right motivation' there ought to be some external factor—perhaps, the teacher expectant behavior—that would drive his 'good teaching.'

To put it in Schommer's terms, "teaching is automatic" (happens naturally and the right way), if the motivation is 'right.' This association with Schommer's categories has led me to consider the semantic connections between motivation and learning in the assumption that the way in which students use the word motivation might, in fact, reveal their epistemological stance on learning.

The perspective of learning as stemming from the will must imply different criteria for learning. John uses this word as if answering a question 'How do I know when I learned well?' The response we could infer would state: 'I learn when I "prove to [my]self that I am not dumb, " when I "fulfil my potential." In the same way, the soldiers in the movie *learn* (John describes them as people who are learn-*ing*, that is growing and fulfilling their potential). And so does the teacher, Bill, portrayed by John as *motivated* once he 'teaches well', that is, once he gets his students "to prove to themselves that they are not dumb." Looking at the family of accompanying words used in this short excerpt, I gained the impression that John uses the word motivation almost as a placeholder implying the activity of sense making—realizing, growing, fulfilling, learning. This activity is will-driven and can be located inside—Does it make sense to *me*?' Or it can be located outside the learner—'Will I be able to ask the question on the test?' The impetus for learning, in other words, may reside internally or externally to the learner. Bill, who is just making his first steps as he learns to be a teacher, is "doing it for income" in the beginning. Later, John states, 'his motivation turns... to intrinsic.'

It is not a surprise that prospective teachers, even in the beginning of their teacher certification program, would be familiar with the psychological terms of extrinsic and intrinsic motivation. It is revealing to me, however, that, while John talks about *motivation*, his two different slants on motivation, internal versus external, appear to relate to two different criteria for *learning*: students learn either in order 'to stay in the army,' or 'to prove themselves they are no dumb.' Similarly, the teacher might learn to survive in the classroom 'doing it for income,' or learn to be 'intrinsically motivated' through caring, connecting, attending to ("hearing') the students' stories. We can imagine soldiers, in John's interpretation, saying, as they grow to fulfil their potential: "We're motivated by our own personal desire to understand the phenomena of the classroom and/or the phenomena of the world." The gaining of comprehension, learning, stems here from the internal impulse directed toward sense making just as a quantum of energy associated with a moving body.[17] More so, this impulse acts continuously in the search for meaning. The Old English relative of the word learning, *leis*, means *track, furrow*. Another Old English relative, *læsten*, means *to continue*. These semantic roots help understand how our use of the words motivation, with its implied internal or external impetus, and learning, a continuous act of following the track of something we are trying to understand, can be linked directly to an epistemological criterion for learning—*the nature of the sense making*. Hence, *Impetus for Learning*, with its internal versus external locus, clearly linked up with epistemological dimensions, appears quite reasonable as a category to be included in the descriptive schema. It can be helpful in describing how people perceive the process of meaning making.

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[17] *Impetus* – impulse, stimulus; energy associated with a moving body; to go toward, seek.
Learn – gain comprehension, gain knowledge.

This category appears especially useful in the context of interpreting the "Renaissance Man." The film presents an intellectually ambiguous task with respect to identifying the impetus for learning, as well as teaching (assuming that the teacher learns how to be a teacher). There is no indication in this film that there is some kind of extrinsic/intrinsic stimulus for learning or teaching. The ambiguity of the task presented by the film comes on the *processing* side. Imagine answering the questions: What is Rago trying to teach? What is this class about? What is there to learn? What does it mean to do well in this class? As spectators, we are left to decide for ourselves. The soldiers have been sent to this Comprehensive English class and they hope this is just going to somehow help them to stay in the army. They show up in the class because they were told to. Other than '*stay in the army*' there are no markers for the soldiers' performance in this class. Neither are there clear markers of what they are supposed to do. In other words, there are no criteria for the student-soldiers *in the film* to use regarding their learning. Similarly, there are no criteria for the students who are *watching the film* to make judgements in terms of what and/or how much is being learned. The spectators watch the process of meaning making while continuously making meaning of the same processes for themselves. The spectator's reflection on the processes of meaning making in the movie—or more specifically, his or her targets of reflection—becomes the focus of the researcher's attention. The articulated, and not quite articulated, sense that the spectators are able to describe in writing, reveal the 'targets' of reflection that their mind followed while watching the movie, and which they associate with certain words, such as the word 'motivation' in John's essay. When such targets of reflection are described verbally, a literary-type analysis of them can indicate, in turn, the epistemological

orientation underlying the spectator's meaning making processes. The variability of the targets of reflection as articulated by the participants in writing and inferred by the analysts becomes a lens for evaluating this particular dimension of personal epistemologies.

Positioning impetus for learning internally or externally to the learner, as a new descriptive category, requires further investigation, with the recognition of the possibility that my interpretation might be a result of the student's writing style, and thus presents rather a linguistic challenge. A researcher in this case might deal with a *production component*, which is different from the epistemic orientation and may vary from a student to a student. I will return to this issue later in the chapter.

b) 'Simple' versus 'Complex'

John's essay reveals one more binary category: *Learning is simple* versus *Learning is complex*. Introducing this category might be helpful for the analysis, since some prospective teachers think too simplistically about the complexities of a classroom. Consider, for instance, the following excerpt, a second paragraph that reads as a likely response to the second question from the instructor's list[18]:

> As far as the students, they came a long way as the class progressed also. Melvin is a good example of that. He couldn't even stay awake for class, or anything else for that matter, in the beginning. I think he slept all the time due to a lack of any motivation. He started becoming interested in class after he told the story about his father leaving his mother, for his aunt. That was very similar to how Gertrude married Claudius after Hamlet Sr. was murdered. Bill made the class *a complex learning environment* for Melvin because the story of Hamlet mimicked the ill structured nature of his real life (347).

[18] Q.2: What role do the students (or one particular student) play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (student behaviors) from the movie.

[Italics added to illuminate on the expression that prompted the introduction of a new dimension candidate: *learning is simple* vs *learning is complex*[19]]

John realizes that the classroom environment might be quite sophisticated and ill-structured, and seems to be approving of the teacher making the classroom environment more complex. Seeing the classroom as '*a complex learning environment*' would assume a perception of learning as rather complex, thus indicating the corresponding pole in this dimension of the epistemological orientation.

At the same time, this student's essay emphasizing the *'fun'* of learning might be suggestive of epistemological orientation described as *'learning is simple'*.

> He [Melvin] learned about rhythm from his classmates, and he really seemed like he was *enjoying* that time when everybody was creating beats, and he was reciting Hamlet in a *new* and *fun* way.
> (*Italics* added to illustrate the motivational character of the reference.)

While the learners' experience appears to be 'fun,' they might still not gain a deeper understanding of it. In this sense, the emphasis on the 'fun' aspect of learning seems to be a simplification of the nature of learning.

c). 'Active' versus 'Passive'

The following passage, likely in response to the fifth question on the instructor's list[20], reveals an *open* epistemic orientation:

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[19] The *learning is simple-* versus *learning is complex*-category is not necessarily the same as *determinate* versus *opened*: some determinate epistemic beliefs can be very complex. An important issue in using this category is to distinguish the complex structure of a phenomenon and the individual's complexity of thinking about it. In other words, it is important to distinguish between the characteristics of a phenomenon (expressed in scientific terms and concerned with what exists—ontology) and the characteristics of an individual's cognitive process responsible for making sense of the phenomenon—epistemology (a category concerned with what we know).

> Bill did face a situation where his students were not confident and had acquired learned helplessness (367). Most of them had been told throughout their lives that they either weren't smart or didn't try hard enough, or who knows what, so they acquire that state of mind that no matter what they do, their not going to become smarter or learn anything. Bill challenged them to think for themselves. That is why the drill Sargent had such a hard time with the English class. As a recruit in the army, you don't have to think; you just do what your told.

The last sentence, in particular, indicates that John is disapproving of the determinate (close) view of teaching and learning. His further elaboration on this theme also suggests considering one more candidate dimension for analysis: '*Learning is active*' versus '*learning is passive*'.

> Bill, though was teaching them the exact opposite. He basically told them that the master of their destiny was themselves. They could accomplish whatever they thought they could, but they didn't know that and that is what Bill pointed out. He taught them that learning isn't the hard part, but recognizing that learning comes from their own state of mind and perception of learning.

The text reveals a strong emphasis on active learning, demanding deep involvement on the part of the learners.

d) 'Individual' versus 'Social'

John's essay emphasizes one more aspect of learning—its *social* nature:

> ...The more that the students shared about their lives and their learning, the more they learned about each other, thus they could start to communicate more efficiently with each other.
> ...Melvin also benefited from *social learning*... The more that the students *shared* about their lives and their learning, the more they learned about each other, thus they could start to *communicate* more efficiently *with* each other.

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[20] Q.5: How does Bill Rago deal with the students' discouraged confidence and willingness to learn? What served as stimuli for the students to learn?

(Italics added as suggestive of a candidate for a bipolar category: *individual learning* versus *social learning*.)

Given such emphasis, it seems reasonable to introduce one more candidate dimension for analysis: '*Learning is individual*' versus '*learning is social*' in nature. It nicely fits the agenda of much of the debates in educational research these days, especially, research on cognitive development from the socio-cultural perspectives.

The *sharing* of knowledge and experiences assumes that many ideas, emotions, and associations go back and forth within a classroom environment, the latter serving as an echo system for such sharing. The very word *'environment'* adds an organistic tone to the essay:

> Bill made the class *a complex learning environment*...
> The more the students *shared* about their lives and their learning, the more they learned about each other, thus they could start to communicate more efficiently with each other...
> The students talked, "rapped", and learned together as *a whole*.
> (*Italics* added in support of the organistic orientation.)

The sharing that goes on in this environment indicates that there is much symbiosis occurring in this environment. The combination of the words 'environment', 'complex', 'sharing', and 'whole' implies that the different elements of the learning environment exchange information in various ways, depending upon each other, and leading to a collapse of all the sequences of individual exchanges into a life of one big organism—'a whole.' Putting the three features of John's interpretation together—a complex environment that Bill created, the various kinds of sharing that take place within that

environment, and the social nature of the students' interaction within that environment—allows me to describe its epistemic orientation as *organistic*.

The above observations suggest that John's essay be described by the following epistemological characteristics: learning is *active*, *social,* and rather *simple* (fun), as well as essentially *externally* stimulated. Of the four initially introduced categories, the 'organistic causality,' as well as the 'open' category, apply here, while the 'teacher/student-centeredness' appears at neither particular pole, but rather as a hybrid somewhere in between. The fourth initial binary category, 'cold cognition versus intuitive/effective/aesthetic knowing,' does not seem to adequately describe the epistemological orientation of this response. Rather, the text of the essay suggests new candidates for descriptive categories.

e) Essentialist versus *Particularistic*

This characteristic of epistemological orientation stems out of my observation of the way in which some of the students use the word *diversity*. Here is Paula's example.

I noticed that 'diversity' is one of Paula's 'specialty'-areas. The notion of diversity is very important for her:

> The class is made up of students that are white, black, male, female, from the city, from the country and from a trailer park. Immediately, we notice it to be a culturally diversified classroom when they are asked to recite why the joined the army. One student does it so not to be like his father who didn't want to see any more of the world and another student does it in honor of his father, the Vietnam War "hero".

This specialty of Paula's response led me to think about her sensitivity to idiosyncratic aspects of knowing—structural or behavioral characteristics peculiar to an individual or group. Such sensitivity stands out especially if we think of a 'scientific' tradition of educational practice. This tradition, similarly adopted by the assessment practices in formal educational settings and educational research, looks at means, central tendencies, and the common denominator. It does so often at the expense of attending to unique characteristics of the individuals, or, likewise, with respect to the particular nuances of the contexts that influence individuals' learning. This tradition derives from the Platonist, or essentialist world-view asserting the ideal forms as an absolute and eternal reality. The 'eternal reality' is presumed to adhere to a common core of meaning, or to a standard. Today's world of education, to a great degree, is made up of essentialist-type categories. So, it is quite surprising to find the student paying attention to the individual, and to how people are different from each other, both psychologically as individuals and also as members of society, having different social, economic, and cultural backgrounds. In epistemological terms, unlike the essentialist, who's *processing* of knowledge—both disciplinary contents and characteristics of the environment—would presume knowledge to be *out there* and *reliable to be taken in*, the person sensitive to idiosyncrasy would think about and, importantly, apply knowledge as *socially constructed.* He or she would attend to the particulars of knowledge in relation to contents, contexts, and processes, and not necessarily expect that the origin and standard for knowledge are known. Let us call such epistemological orientation *particularistic*.

In the excerpt above we see how the knowledge about self is constructed by the differing contributions of different soldiers. There is no common origin or cause for this type of knowledge. It originates rather in the particulars of each soldier's life histories: one tries to look like his father, another tries to avoid any commonality for the reasons individually specific. Paula

seems to be quite sensitive to these individual particulars, she notices them "immediately" as she states herself. This example suggests, therefore, another candidate for describing epistemological orientation. I would call it *Essentialist* versus *Particularistic.*

This can be a useful category because it adds an important dimension to the epistemological 'profile' of a student's response. Specifically, it helps to understand the epistemology underpinning the *practicing* (applying) of knowledge, and of the meaning gained. That is, a person processes knowledge by attending to the particulars and differences while emphasizing disintegration, or by seeking the commonalities while emphasizing the centralized control of variables.

A proper question to ask now is just how many dimensions might be sufficient for an adequate description of an individual's personal epistemology? This question remains to be examined in a more elaborate study. Literature suggests maximum of ten (Pintrich, 2002). The amount of data I had did not allow me to answer this question with certainty.

Which Pole of a Binary Category?

While analyzing students' essays, I came across the challenge of attributing a student's response to a particular pole of a binary category—a kind of inconsistency that characterized the process of attributing the epistemic orientation, which might be suggestive by one and the same response. This challenge has to do, in part, with the fact that some of the students have chosen to use the questions from the instructor's list, for example, questions that asked directly about the teacher's (question #1) and the students' (Question #2) roles.

Some of the students have directly referred to these questions by numerating the paragraphs of their essays correspondingly, while others did not refer directly, but explicitly followed the sequence of the issues reflected in the questions. In the third case, there was no indication of reference to a particular instructor's question. It seems reasonable to ask: How do we treat the qualification *teacher-centered* for the epistemological orientation revealed in a student's response when the student answers a question which directly asks about the teacher role? Or, similarly, should we regard the epistemological orientation of a student's response as *student-centered*, if the student explicitly responds to the question, which directly asks about the students' roles?

I will illustrate this challenge below with three students' essays as examples.

1. Paula

Paula's essay allows me to illustrate my reasoning behind such cases. The passage below is most likely written in response to the first question from the instructor's list[21]:

> As the class evolves, we see Bill playing several roles. The first we see is as a mediator as he diffuses a scuffle between students. This is the first sign that it is a diversified class of personalities. Another role he plays is as an instructor where he attempts to teach concepts of poetry. A third role Bill portrays is as a motivator. He takes the students from a point of denying poetry because it "don't even rhyme", which was quoted by one of the students (I didn't get all their names) to understanding and enjoying it.

Q.1 What role(s) does the teacher play as the course evolves? Consider two or three different points in e and provide your answer with specific examples (teacher's behaviors) from the movie.
e whole sequence, in which issues are addressed in Paula's essay, leads me to think she used the stions from the instructor's list and used them in the same order.)

One might assume that a strong emphasis on the teacher's role and actions, along with the use of strong active verbs, can be suggestive of a teacher-centered orientation of this passage. We can not use this as evidence for epistemic orientation, however, because this emphasis is placed inside the passage which explicitly responds to the question directly asking about the teacher role.

Here is another excerpt that allows me to illustrate the challenge of attributing a particular epistemic orientation to a student's response when the student follows the list of instructor's questions.

> *The role of the students is crucial* because they challenged Bill when he made a comment about Hamlet and how they wouldn't understand it. It hit him hard when one student asked him if he didn't think they were smart enough to understand. That is when the teaching and learning inspiration begins in the movie.
> (*Italics* added to highlight a line used to illustrate a methodological challenge discussed below.)

This excerpt is explicitly referring to the content of the question about the student roles.[22] Though we can clearly see here the emphasis on the students' role in the process of learning, 'The role of the students is crucial,' we can not characterize Paula's response as student-oriented. We would be eligible to have done so if correspondingly a strong emphasis on the role of the students were made in her previous paragraph, in which Paula explicitly responds to the teacher-related question from the instructor's list[23]. For

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02: What role do the students (or one particular student) play as the course evolves? Consider two or e different points in time and provide your answer with specific examples (student behaviors) from the vie.

).1: What role(s) does the teacher play as the course evolves? Consider two or three different points in e and provide your answer with specific examples (teacher's behaviors) from the movie.

instance, if this student's response emphasized the crucial role of the student-soldiers in affecting the teacher's motivation to intervene in a fight between them, the researcher would be able to describe this response as student-centered. In other words, such an attribution would have been more valid if the student-centered emphasis was revealed in a response to a teacher-related question from the instructor's list. This is not the case in Paula's response, as she talks about the roles of a teacher and the students in two separate paragraphs, referring to two different questions—related to teacher roles and student roles correspondingly.

As much as we can find a teacher-centered emphasis revealing itself throughout this student's essay, we apparently come across a seemingly opposite statement. In the very last paragraph, where Paula is most likely responding to the last question on the instructor's list[24] regarding Bill's teaching philosophy, we find her emphasis on the students' roles in learning:

> Bill fits into the constructivist approach to learning where "the active role of the learner in building understanding and making sense of information" is emphasized (Woolfolk p. 347). As stated by Prawat, 1992, p. 357, "putting the students' own efforts to understand at the center of the educational enterprise" is one of several interpretations of what constructivist theory means (Woolfolk p. 346). The students' efforts were most certainly a big part of learning Hamlet. Two elements of constructivist perspectives are: 1) social negotiation which is the "aspect of learning process that relies on collaboration with others and respect for different perspectives" (Woolfolk p.347) and 2) multiple representations of content which is "considering problems using various analogies, examples, and metaphors" (Woolfolk p. 347). To make the learning experience successful, all class members needed to be present and participate as a group. They also helped one another learn by using their life experiences as examples and analogies.

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[24] Q.6: How could you describe Bill Rago's teaching philosophy? Which concepts from your reading fit or do not fit with the philosophy of this teacher? Why do you place him/her in this philosophical "camp"?

> Through the element of social negotiation and multiple representation of content, Bill brings his class to a point of proven confidence and willingness to learn.

The above paragraph combines the appreciation of the role of learners in learning, 'The *students' efforts* were most certainly *a big part of learning* Hamlet,' with the strong teacher-centeredness, 'Through the element of social negotiation and multiple representation of content, *Bill brings his class* to a point of proven confidence and willingness to learn'. The appreciation of the learner's role in their learning indicated within a teacher-related passage allows for attributing this as a student-centered response. Yet, the end of the same passage seems to be suggestive of the strong teacher-centeredness.

2. *Hannah*

This student seems to alternate her position in such a way that the suggestion for either of the opposite sides of the binary category 'open'-'closed' appear legitimate. Hannah begins her response by identifying her perspective of the teacher's role in the beginning of the film:

> ...we are introduced to a classroom of diverse underachievers and a man in charge of fostering their English abilities.

She indicates then the change of that role and is also able to name those roles at different phases of the teacher's learning process: a 'supervisor', one who 'models', and a 'learner':

> ...Bill Rago's role of teacher evolves from supervisor to model and finally to both teacher and learner.

Such observation demonstrates that Hannah realizes the potential for exchange, even reversing between the roles that one and the same person can have within the process of teaching and learning to teach. Hannah's admission of the irregularity of a learning process can be described as an *open* epistemic orientation. A further elaboration on the same topic—the teacher's roles in the movie—however, reverses this impression:

> In the beginning clip Rago struggles to maintain order with the uninterested troops, however as he begins to explore Hamlet with the class we see him loosen-up and utilizing scaffolding methods of instruction.

Bill's explorations in teaching that took place quite spontaneously and often to his own surprise, are portrayed by Hannah as if, though 'loosened-up', he still followed a prescribed routine (by 'utilizing scaffolding methods of instruction'). *"Utilizing"* is a strong verb, which emphasizes a prescribed order of actions, presumably followed by the character. Such a description of Bill's explorations sounds at odds with a less sure progression in Bill's attitudes and behaviors in the movie. Hannah's progression seems to be inevitable and occurs in rather determinate steps—an indicator of a rather *closed* epsitemic orientation—while the movie emphasizes the spontaneous, accidental way in which the characters' behaviors change or any event happens. Therefore, Hannah's reference to a Vygotskian model sounds like a more naive conception of his theoretical framework. In her interpretation, this model sounds more like a formal, determinate framework with fixed steps and temporal boundaries, rather than a loose network of inter-subjective exchanges.[25]

[25] Through these references, we can see the student's misconceptions of the theoretical framework introduced in the course. That is, we may find the Vygotskian theoretical propositions of learning presented in a rather closed, determinate way. This observation led me to conclude that, besides the movie itself, the *theories* introduced in class can also serve as projective devices or tests.

The excerpts above might sound teacher-centered. We are mindful, however, about their placement in the essay which suggests that Hannah was likely answering the first question on the instructor's list, that is a teacher-related one.[26] Later, not in a teacher-oriented question, Hannah emphasizes, again, the teacher's superior role in building the relationship among learners:

> The ability *of Rago* to develop such a strong relationship between his students and himself is through the language *they* use.

Hannah's emphasis on the use of the language that *they,* student-soldiers use, might seem to be suggestive of a *student-centered* orientation of her reference. A reader can interpret her response in such a way, for instance: The teacher Rago was able to have success, because he does not insist on using *his* language, but, instead, tailors himself to what his *students* are *doing*. In other words, the students lead the way or the students choose the language, which should indicate the self-empowerment by the students. However, we have to pay attention to what question Hannah is addressing in this excerpt. Her essay does not have direct references to the instructor's questions. Instead, she sometimes poses her own questions, like in this case. The excerpt above was preceded by her own question: "How does the relationship evolve between Rago and his students?"

[26] In the analysis of the students' essays, when questions from the instructor's list were not directly identified by a student, I could only reveal a sequence of the topics addressed by the student and make assumptions as to whether that sequence is suggestive of addressing particular questions from the instructor's list.

A stronger evidence for teacher-centeredness of this student's response can be found in a passage in which she freely expresses her impression with the movie without relating to any of the questions from the instructor's list:

> I have seen the movie... before I was about five years younger and struck by the motivation Danny Devito was able to arouse in his students. I believe he accomplished this through his compassion and ability to communicate in a way his students could understand him and apply his message. Obviously the amount of applicable knowledge was important to the recruits synthesis of the material.

In this excerpt, all of the credit for student learning goes to the teacher (actor Danny DeVito). The verbs Hannah uses appear to reveal her thinking of teacher learning as a linear transmission of knowledge from one source to another in a straightforward manner:

> He gains background knowledge... and he employs his lessons and involvement to contain what his students already know. He provides divergent examples and instruction. (Underlined by the student.)

Yet, it is 'through their [students'[27]] growth' that 'Rago grows and learns' [underlined by the student]—the statement shows Hannah's realization of the interrelationship existing among the participants of the learning process. One can learn—'grow'—by virtue of the interrelationship with another (with others). Such a Vygotskian notion is indicative of the *openness* of this statement's epistemic orientation.

Such an orientation is also supported by the following interesting reference that Hannah makes to a "Rap" scene:

> ... many times they [the students] use their slang tongue. This *freedom* allowed for an expression usually not tolerated in a typical classroom, the Rap of Hamlet.

[27] My note, O.K.

> In this scene we see the students *utilizing* their learned knowledge *in analytical manner*, but the result is just what Rago was hoping for—a synthesis of curriculum.
> (Underlined by the student. *Italics* added to illustrate a cognitive epistemic orientation of the passage.)

While the use of the word "freedom" is suggestive of *openness* or the 'open' category for epistemological orientation, it also appears as if Hannah frequently switches between the *'open'* and *'close'* categories. For instance, Hannah writes later in the essay:

> It is very obvious to me that this classroom was *designed* very closely to a social-learning *model*. Rago is the facilitator—he provides the scaffolding and works within the means of his students' zone of proximity.

The way Hannah describes the evolutionary character of the change that she observed for the teacher and student roles in the movie suggests the *open* epistemic orientation. At the same time, Hannah does not see the evolution of the learning environment in the same way. To her, it is 'designed', that is, pre-determined, closely to a pre-existing 'model.' The scaffolding provided by the teacher appears to be a framing tool to match the size of the 'zone', which suggests rather a *closed* epistemic orientation. This deviation in Hannah's qualifiers for the teacher/student roles and the learning environment tells us about the conflicting epistemic orientations—*open-close*—found in one and the same essay. Perhaps, in this case, like in the previous one of Paula, we are dealing with a *hybrid-type* of an essay, which, in various passages, can be credited on either side of a continuum for one and the same category.

Another hybrid-type category we can observe in Hannah's essay is *'cognitive'-'affective'*. This is how Hannah is responding to a question regarding the students' roles[28]:

> Rago's students follow similar suit to their instructor.

There is a 'progression' in that 'suit', from being bored to a 'remarkable involvement'. This progression includes the emergence of the leader in the group of students (Hannah refers to LeRoy).

> When Rago questions Ophelia's role in Hamlet, LeRoy provides a well thought-analytical response which in turn inspires and motivates his peers.

Here, again, Hannah indicates the interrelationship among the individuals' motives for learning, but, according to the words used, that relationship is cast into a rational, merely *cognitive* frame, 'a well thought-analytical response', which is supposed to somehow pre-determine the inspiration and motivation for those surrounding the leader.

Yet, throughout the essay, we observe Hannah several times incorporating *affective* qualities of learning in her descriptions. Thus, describing the development of the teacher-student relationship, she points out:

> His students learned because they were inspired to *"feel it"*—not just do it. Rago says something to the affect of you will not win a car but you will *feel* it. Rago was able to provide his students with the opportunity *to feel* proud.

[28] Q.2: What role do the students (or one particular student) play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (student behaviors) from the movie.

(Quotation marks used by the student. *Italics* added to highlight the affective quality of "it"—the learning.)

A repeated use of the verb 'to feel' indicates the importance for this student of the affective quality of learning. Describing the change in the soldiers-students' involvement, Hannah emphasizes that 'at first they are bored'—a state of mind that can only be felt. She continues:

> A trust is achieved. He [Rago-*OK*] is their model—he provides the clues not the answers.

This one line is suggestive of both *teacher-centered* and *affective* epistemic orientations. Both of these categories are supported on a number of occasions throughout the essay, often going hand in hand:

> He [Rago] utilizes group participation and communication... Bill Rago also understands the behaviorist need for reinforcement... creating the intrinsic motivation and intrinsic rewards which enhance self-esteem and self-efficacy. Bill Rago attains this when his troops show [up] though the test is unrequired. "Renaissance Man" and Rago's instructional methods are hand and foot: they try to touch every aspect of human learning—both educational and emotional.

It appears from Hanna's writing that all of the student's learning is under Bill Rago's control or depends on him and his methods, as a teacher-centered epistemology would imply. At the same time, the teacher's efforts are to support the *emotional* learning—a statement, which suggests the affective dimension of this student's epistemology.

While reading Hannah's essay, I have thus found some evidence for describing its epistemic orientation by both opposites of two particular categories: *open-close* and *cognitive-affective.*

3. John

Unlike Paula, who indicated the instructor's questions in her essay and numerated her responses accordingly, or Hannah who's statements I was able to relate to certain questions indirectly based on her sequencing, John's essay seems to be the least referring to any of the instructor's questions. Earlier, I used John's reference, which emphasized the *'fun'* of learning, and concluded that it might be suggestive of epistemological orientation described as *'learning is simple'*: "...[Melvin] ... really seemed like he was enjoying that time when everybody was creating beats, and he was reciting Hamlet in a new and *fun* way." I also interpreted this statement as indicating a simplistic view of learning. This second observation, interpreting the passage above as suggestive of a more primitive level of thinking about teaching—puts in dispute my earlier statement regarding the possibility to describe the epistemological orientation of this essay as implying the notion 'learning is complex'. In the previous section, I argued that John is approving of the teacher creating a complex learning environment and suggested this implied a 'learning is complex' orientation. When John turns to describing the roles and behaviors of the students, however, we see him emphasizing the fun of their experiences, which moves the orientation of his interpretation toward the 'learning is simple' pole. A categorical hybrid within the bipolar dimension *'complex'—'simple'* makes us face, again, a kind of inconsistency in describing epistemological orientation based on one and the same essay.

With the help of the above three essays I have attempted to illustrate the reasoning behind my interpretation of an epistemologically 'inconsistent' student's response, whether observed in relation to the instructor's questions or without such relation.

Evidently, if the students chose to use the instructor's questions, they used those questions for their own purpose and in different ways. This difference allows me to consider the results of my interpretation as being valid.

As I grappled with this methodological challenge of dealing with the students' references to the questions on the instructor's list, I came to a conclusion about the potential quality of epistemological orientation: the students' responses might imply some sort of *epistemological uncommitment*[29]. For a teacher and researcher, the question to ask is: What would be the origins of such 'epistemological uncommitment'?

One might argue that the questions from the instructor's list have prompted the response of those students who chose to use them to be likely focused either more on the teacher or the students. While this might have been true in this study, it is important to keep in mind that those questions were suggested, but not required by the instructor. Many students have chosen to write their response in a free-style format, as their own thinking suggested. Therefore, I based my interpretation of responses on the following proposition: A judgment in favor of specific epistemic orientations should be primarily supported by *variability* of the students' interpretations of one and the same scene, character, behavior, etc. It is this variability of responses to one and the same stimulus, which allows for qualifying (categorizing) epistemological orientation of responses in this study. The students' selectivity patterns (selected scenes, characters, behaviors) were to support this categorization process.

A suggestion here would be to consider whether a student in his or her response is focusing primarily on the students—the students' roles, behaviors, actions, decisions, and

so on—in a teacher-role-oriented question. Or, similarly, whether a student is concentrating his or her response primarily on the teacher in a student-related question. For the purpose of this study, I admitted that the reflective essay would not be classified as reflecting a particular epistemic orientation, if it indicates teacher-centeredness—for instance, if it is focused mostly on the teacher role—when the student is answering the question about the role of the teacher. In other words, the fact of responding to a teacher-related question while focusing primarily on the teacher would not be an important argument in making a judgment about the individual's epistemic belief. Similarly, the focus in the essay on students in a passage where its author responds to a student-related question, for instance, the instructor's question about the role of students, would not lead to epistemological classification, unless there is some strong evidence elsewhere.

What counts is that there would be a strong evidence corroborating with the teacher-centered epistemic orientation outside the paragraph which can be attributed to as a response to the instructor's question about the teacher role. It also is very suggestive when the student takes a very student-centered stand in response to a teacher-related question and a teacher-centered stand in response to a student-related question. This would be a much more valuable argument for describing an epistemic orientation of a given individual response.

'Rorschach'-Within –Rorschach'-Ttests

In the previous section, we saw how the theoretical perspective on learning introduced in class might prompt specific interpretation of the movie, thus projecting

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[29] I owe the idea of the lack of epistemological commitment to Rand Spiro.

onto the student's personal epistemology. In other words, in Hannah's case, for example, the Vygotskian theory itself served as Rorschach-type test when it came for Hannah to interpret the "Renaissance Man."

Another finding suggested by the students' essays was a particular, 'testing,' role of the scenes in the movie that served as independent projective devices: different students would refer to the same scene, interpreting it in various ways that seemed suggestive of epistemic orientations. I called such scenes 'Rorschach-within-Rorschach'-tests. In this section, I illustrate how a scene in the movie may trigger the kind of responses that seem to be suggestive of the epistemological orientations implied by these responses. By looking at the two references to the same scene, we can see how the two people refer to one and the same episode in the movie and reveal features of the differing epistemic beliefs.

A reference to the scene "*Rhythm,*" where Bill helps a student struggling to read by putting a line from the Shakespeare's text on a rhythm, appears a particularly provocative 'Rorschach-within-Rorschach'-test: it prompted interesting and varying interpretations in the students' responses. In this scene, the teacher encourages the soldiers to tap out a Shakespeare's passage in a rhythmic pattern— palm-beat upon the desktops—to help one of the soldiers, Melvin, to read the passage without interruptions. Several students refer to this scene, pointing at rhythm (a rhythmic repetition) that helped Melvin, to read. Following are three examples illustrating the students' references to this scene.

Anna: 'This above all--to thine own self be true'

> Bill asks students to tap out a beat on the desks, and then he begins chanting the line, "This above all to thine own self be true." He repeats it over and over so that Melvin can hear the *beauty* and the *rhythm of the words*. He truly believes that Melvin can learn and that he can reach him. Bill seems to believe now in an incremental view of ability—that is, ability is a malleable characteristic that can be changed (390). Thus, he strives to improve the ability of all his students. Teaching is now more than a job for him—it is his mission.

The above excerpt shows that for Anna the 'Rhythm'-scene is associated with *a sense of beauty* of the language. Anna points out that the rhythmic repetition helps the student grasp "the beauty' of the words. I hear her saying that, if there is an appeal for a learner in the subject, that is, if the subject—in this case, the Shakespeare's text—appears *'beauty'*-ful, and the learner 'hears' in its line more than a collection of printed words and attends to its internal rhythmic life, then there is a chance that the learner would grasp the essence of the text. The utterance *'He repeats it over and over so that Melvin can hear the beauty and the rhythm of the words'* can count, in my view, as an indicator of an assumption Anna might hold that learning happens when the learner is *empathetic* about the subject. In other words, the internalization of knowledge requires practice in attempting to know the new subject empathetically. The notion of 'the beauty and the rhythm' embedded in Anna's reference to the scene implies, thus, *an aesthetic* appeal. To say it differently, appreciation of the beauty is for Anna an aesthetic principle of learning.

Etymologically, "beauty" evolves from the word "the good," "the whole." A "world-exploring" manifested through beauty is more complex, more effective, more compelling, and tends to adhere to a new order as a whole (Booth, 1999). So, an aesthetic principle of learning implies also a more holistic learning.

More so, the notion of beauty implies a means for a teacher 'to reach' the student and, therefore, influence this student's ability. So, that ability, is not, in fact, 'a fixed characteristic.' Anna's particular reference to Anita Woolfolk's textbook emphases ability as 'a malleable characteristic that can be changed.' The very tone in which Anna describes this characteristic celebrates and honors the evolutionary nature of ability, which implies change in the way a student interacts with the disciplinary concepts (ability is 'improvable'). In addition, the students' ability serves also as an additional impetus for the evolution of teaching philosophy: "Bill seems to believe *now* in an incremental view of ability... Thus, he *strives* to improve..." As Bill reaches out more and more to his students, striving to improve their ability, he begins to perceive teaching as 'more than a job'—rather a 'mission'. [30] Both the evolution of the students' ability to learn and the teacher's motivation to teach are mutually influential, which frames another evidence for *openness* as a characteristic of Anna's response.

Further, the sense of *'beauty'* and the grasp of *'rhythmical repetitions'* within the process of teaching and learning implied, as well as her notion of *'mission'* as the major intent for teaching, suggests that Anna is taking into account the qualities of learning experience other, than merely an intellectual reasoning. We can find some sense of affective and intuitive in Anna's perception of the nature of teaching and learning, so the epistemic orientation of her essay can be described as *affective* (or *intuitive*).

[30] Interestingly, the word 'mission' is not pronounced in the film. Anna's statement about teaching as a 'mission' might, therefore, suggest her own belief about the nature of the teaching profession. We can assume, however, that the earlier conversations and references made in class might have brought this word to the floor. The reading of Anna's work beyond this essay might prove my assumption.

John: 'Putting on the Ritz'

> "He [Melvin] learned about rhythm from his classmates, and he really seemed like he was *enjoying* that time when everybody was creating beats, and he was reciting Hamlet in a *new* and *fun* way."

The sense of the enjoyable learning experience can be contrasted with the emphasis on the aesthetic dimension of the same experience. As I mentioned earlier, the learners' experience might be 'fun,' but they might still not comprehend the aesthetic structure of the text, that is, they do not gain a deeper understanding of it.

In addition to emphasizing the fun of learning, John also does not seem to be totally disapproving of the fact that the students' do not relate to the 'Shakespeare's old English':

> The communication between Bill and the students was a translation most of the time. Bill would read Shakespeare's old English, yet not one of the students knew what he was talking about. They could only communicate in the modern English, with lingo and background making a difference.

One could argue that the *Old English* is a big part of the aesthetic of the Shakespeare's text. We can learn from Shakespeare by using Shakespeare's language, not by expressing his text in a slang (lingo), that is, appreciation of Shakespeare is not achieved by taking Shakespeare's language out of its original context. Anna, as we saw in her essay, seems to say: "If you pay attention to the rhythm, you could see the beauty of the Shakespeare's language itself. (Not just make it fun.)" For John, learning does not appear to be associated with appreciation of Shakespeare's text itself. In his essay, we read, on the contrary, about reducing the wisdom of this text to the lingo of the every-day life.

The epistemic orientation of John's essay does not seem, therefore, to include the appreciation of the aesthetic as we saw it in Anna's essay. The epistemic language that we can hear in this essay sounds rather like: "Make Shakespeare fun... Put it on a rhythm... Don't use his old English... Translate it into the everyday lingo..." It seems to be a different focus than Anna's. Therefore, I admit that the emphasis on 'fun' might be interpreted as a simplistic thinking about teaching or learning compared to the intrinsic appreciation of the aesthetic in the Shakespeare's text.

Comparing the two examples, we see Anna talking about rhythm in a sense of "beauty," while John sees rhythm as allowing for "reciting Hamlet in a new and fun way." Anna regarded the scene as implying an *aesthetic* quality of the student-soldiers' experience, which is different, than saying it's "*fun*" or "*new*." This variation in interpretation indicates a different reason for the 'beats'—rhythmicity of a communicative message or text—to be helpful in learning. While Anna uses the reference in a way that emphasizes the importance for her of the aesthetic dimension of a learning experience, John describes the same scene as 'new and fun,' interpreting it rather as an external stimulus for students to learn.[31]

Paula: A mnemonic device

Paula, in turn, talks about the rhythm, or 'rhyme', referring to a different, earlier, scene in the movie, in which one of the students says about the Shakespeare's poetry: "How is it a poetry?... It doesn't even rhyme!"

[31] In Anna's essay, the aesthetic appeal of the subject for both the learner and the teacher implies the driving force for the teacher to learn how to reach his students.

> He takes the students from a point of denying poetry because it "doesn't even rhyme", which was quoted by one of the students ... to understanding and enjoying it.

According to Paula, the soldiers have not understood Shakespeare at all when first introduced. As I read Paula's quote here, when the text started 'rhyming', that meant a sort of understanding of the text. In other words, poetry is understood when it does 'rhyme', clicks, to the student-soldiers' sense [of poetry], so to speak.

Paula indicates that if poetry *'rhymes,'* this means it is *understood* and *enjoyed.* The latter qualifier, *'enjoyed'*, indicates Paula's attention to the aesthetic appeal of the content and/or process of learning: people learn poetry when it is 'poetic'. Poetry does not have to rhyme to be understood and enjoyed. It takes students from a point of denying poetry, because "it doesn't even rhyme", to one of understanding and enjoyment when it doesn't rhyme. In other words, poetry is experienced poetically, if it is enjoyed. There's a level of appreciation of poetry beyond a rhyme.

Later in her essay, Paula also refers to the "Rhythm" scene by qualifying what she thinks helped students to learn when they "rap" the lines musically' as 'a *mnemonics* of sorts.' Rhythm as a mnemonic, which helps students to learn, is not a 'fun', as in John's response, not an 'aesthetic', as in Anna's, but a means for the active transfer of the teacher's knowledge.

The three examples above led me to conclude that there might be scenes *within* the movie chosen as a projective device, which, like the 'Rhythm'-scene, can help elicit

various interpretations from students and help describe their epistemic orientations. In other words, such scenes can serve as 'Rorschach -within- Rorschach'-tests.

Paula's essay has also allowed for aggregating this new descriptive characteristic by combining the two such scenes into one descriptor. The earlier scene that Paula refers to, with a soldier's exclamation "*...It doesn't even rhyme!...*", can be viewed as an embedded within a movie plot antecedent to the following "Rhythm"-scene, in which the soldiers tap out a rhythm, helping Melvin to read a passage. Under this assumption, I would connect this scene-antecedent to the 'Rhythm'-scene and combine the two under a 'Rhythm-scene' category which I can define as a 'Rorschach -within- Rorschach' test. That is, I view this descriptive category as a scene/episode selected by different students as the same reference for their written responses to the movie and interpreted by them in different ways. This variability in student responses reveals differences in how students think and offers a researcher valuable evidence suggestive of differing epistemic orientation of their responses. So the overall response to the somewhat ambiguous stimulus—the film—can also include some ambiguous points *within* it, the places like the 'Rhythm'-scenes that have their own 'Rorschach'-test features. With the help of such a 'Rorschach -within- Rorschach'-scene we can watch the different ways, in which people are talking about rhythm, and find out the role they attribute to it in learning and understanding. With the help of such a 'Rorschach -within- Rorschach'-test, I gain additional evidence to support the particular epistemic orientation of a student response by piecing the various responses via this new descriptive dimension. Thus, I observe that, when referring to the "Rhythm" scene, one student sees it as a '*mnemonic*' tool, another says it is *'the beauty'* of the rhythmisized poetic language that helps to learn, while the

third associates rhythmicity with '*fun*' in learning. The 'Rorschach'-type character of this scene—different people look at the same stimulus and interpret it differently—allows me to suggest that these student responses imply the *'cold-cognitive'*, *'aesthetic'*, and *'simplistic'*[32] epistemological orientations, correspondingly.

What Can We Learn from the Author's Linguistic Pattern?

My final observation relates to the richness the students' responses enabled by the open-ended format of their reflective essays. This format yielded a large number of metaphors used to describe the characters in the movie, as well as the very process of learning or teaching.

One of the challenges is that, while the use of a metaphorical language in the essays can tell a researcher about the students' linguistic habits, they might not necessarily be telling about epistemological orientation of the responses. In some cases, I wondered, however, whether those were telling ones. John's vivid use of the metaphorical language, for instance, would surely attract the reader's attention:

> Bill lead the students, but more as guided discovery than just *shoving info down their throats*. (*Italics* added to highlight the metaphor.)

John, himself, points to the use of the metaphorical language by the teacher in the movie as well:

[32] I put it as 'simplistic', because John's '*fun*' of learning appears to be different from Anna's '*aesthetic pleasure*' or *'aesthetic appeal and enjoyment.'*

> He could explain Shakespeare in a way that the students could relate to it. He made it more of an authentic task using metaphors for real-life situations, which compounded the understanding for Shakespeare within the students.

The fact of highlighting the importance of the use of a language not ordinarily heard by the students in real-life situations for their understanding is suggestive of somewhat *open* epistemic orientation. The appreciative tone with respect to the teacher's leadership that was not like 'shoving info down [the] throats' suggests an *active* epistemic orientation.

The authored form of the responses made not only the reading more interesting, but, most importantly, allowed for revealing the aspects of epistemological orientation in more details. Watching for the students' metaphorical expressions, we can also learn about a student's own implicit theory of teaching. Importantly, it is the richness of the students' linguistic patterns that allowed for revision of my earlier interpretations of the students' responses, once the descriptive categories were clarified at the later stage of the advanced analysis. I will illustrate these propositions with Anna's essay below

Implicit theory of teaching

Anna is one of the few students that revealed her own theory of teaching in a more explicit way. Such explicitness has to do in part with Anna's advanced writing skill.

> At first, Bill plays the role of a disciplinarian. For example, in the first clip, he whistles loudly to get the students' attention as a fight almost breaks out in the classroom. Later at the bar, Bill's friend remarks, "I think the whole educational system is in deep trouble," and implies that it is the army's job to shape up the poorly educated and poorly disciplined students that come out of our nation's schools. Bill's students seem to fit this description—they are disruptive, they lack motivation, and some of them barely know how to read. The army does not expect Bill to teach them how to read and write, just that he will straighten them out so

> that they will succeed in the army. No one expects that they can actually learn English skills. Bill seems to believe at this point in the entity view of ability—that is, ability is a fixed characteristic that cannot be changed (390). Thus, he goes through the motions of the school day with little hope of making a difference in the students' lives.

Anna distinguishes between the two teaching goals: providing for basic *skills* and making a difference in students' *lives.* A skill is described as *a fixed characteristic that cannot be changed*, where she makes a relevant reference to the textbook, finding a good match between her thinking about the nature of the basic skill and the context in which the term is used in the textbook. The two early scenes from the film, which Anna refers to in this passage—"*Fight*" and *"Perspective on Educational System (A Talk In The Bar)"*—do not involve a talk about 'teaching for making difference in somebody's lives', that is, there is no direct prompting in the movie for the student to use such a jargon. Eventhough, Bill Rago is shown in the Bar-scene as concerned with the life stories heard from his students, this is not yet the place where he actually pronounces the word *"life"* in connection to learning. He does so later, so we might assume that Anna is responding to Bill's later reference in this passage. Regardless of the actual prompts that might have originated in the movie, the linguistic development of this passage makes me think that it reveals Anna's own implicit belief about what teaching ought to be rather, than a mere description of Bill Rago's character. From finding a category of a '*disciplinarian*', whose role is supported by the whole educational system, the passage moves smoothly to a connection between the poor performances in various domains of the students' activity—a connection that implies the relationship to the rhetoric adopted by the educational system: 'they are disruptive (behavior), they lack motivation (motivation), and some of them barely know how to read (performance based on prior experiences).' This rhetoric is

woven into to a 'straightening out' function of the educational system, that of providing for the basic skills—fixed and unchanged. Swiftly, Anna enters a wavy line of the last sentence, where her lyric prepares the reader to meet her notion of teaching: 'making a difference in the students' lives.' Epistemologically, such belief about teaching implies a perspective on learning—learning to teach—as an active process, with the locus of impetus for such learning residing within the learner.

Applying the newly emerged criteria—Reading anew

In Anna's essay, it is easy to trace responses to the questions on the instructor's list—question after question—though, she does not indicate that directly anywhere in her essay. The strong likelihood that this essay does follow the instructor's questions allowed me to eventually sort out the attribution of its epistemic orientation. Initially, having read this essay for the first time, I made a conclusion that, since most all of the active verbs in the essay are expressing something that the teacher is doing (rather than the students), we can assume the *teacher-centered* epistemic orientation of this student's essay. The first three paragraphs of the essay seemed to be especially suggestive of such epistemic orientation. The first of these paragraphs was cited in the previous sub-section. Anna goes on for another two paragraphs talking about the teacher.

Bill, the teacher, 'plays the role' of a particular model—that of 'a disciplinarian'. Bill 'seems to believe' in certain view of ability. In other words, it is the teacher's expectations that are important for Anna as the primer locus of concern as to how people become capable of understanding things (or coming to know). So, it is the teacher who 'goes through the motions of the day" to make or not to make any difference in the

students' capability. It is Bill who 'decides on a whim to teach Shakespeare', not the students who would have found the point of their interest. It is the teacher who is trying various maneuvers to help a student improve his reading skills: 'asks students to tap out a beat'; 'begins chanting'; 'repeats it over and over again'. It is Bill who 'strives to improve the ability of the students' (not the students themselves).

Thinking along these lines, I initially described the epistemic orientation of this essay as *teacher centered* based on the first three paragraphs of the essay. However, further reading of the entire array of the students' essays and paying close attention to the way in which some of the students respond to the questions from the instructor's list prompted a revision of my earlier attribution. In the analysis of Paula's essay, for instance, I saw how evident the epistemic orientation might be if a student focuses primarily on the teacher role, or teacher behaviors in a paragraph, which does not respond, directly or indirectly, to a teacher-related question from the instructor's list. Having made this observation, I returned to Anna's essay to find out that my earlier conclusion regarding the teacher-centered orientation of her essay can be true only in part. Let me explain this 'discovery.'

The first three paragraphs of this student's essay explicitly respond to the first question on the instructor's list[33], which asks directly about the teacher role. Hence, these paragraphs are not a valid evidence for describing this student's response as teacher-centered. Apparently, such a description of the epistemic orientation can be made only on the basis of Anna's sixth paragraph:

[33] Q.1 What role(s) does the teacher play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (teacher's behaviors) from the movie.

> When a male student becomes discouraged about having to read a female part in Hamlet, Bill starts reciting lines from another female part to show that he would not make a student do something he would not do himself. He also describes how in Shakespearean times all female parts were played by male actors. He helps the student see the part as a welcome challenge rather than a punishment. When students are upset about the prospect of taking a test, he tells them that they do not have to take it but that "I want you to know what it feels like to make the grade all on your own." Anytime when students become discouraged, Bill encourages them to believe in themselves and to be intrinsically motivated.

In this paragraph, Anna responds to a question regarding the stimuli for learning.[34] This question meant to offer an opportunity to a respondent to concentrate on the teacher or the students alike. Anna's choice to focus only on the teacher's behaviors, therefore, is suggestive of teacher-centered epistemic orientation. The fact that the entire essay has a strong emphasis on the teacher role and behaviors, while focusing on the students only when responding to a student-related question, supports this conclusion. The following sub-section shows how this conclusion gets further modified.

Dialogic weaving: What can we learn from the author's linguistic pattern?

As Anna reflects on the movie, she seems to lay out the perspective on teaching, which can also be described as *open* rather than *determined* in terms of its epistemic orientation. I am getting this impression when reading, in particular, her description of the beginning part of the movie where Bill acts in the role of '*a disciplinarian*' and thinks of the student's ability as of '*a fixed characteristic that cannot be changed.*' The very style of Anna's writing—that of a dialogue—reveals her capability for finding relationships that are interconnected and can imply irregularity. Here is an example

[34] Q. 5 How does Bill Rago deal with the students' discouraged confidence and willingness to learn? What served as stimuli for the students to learn?

where she describes the teacher's attitudes to teaching and to his students early in the movie:

> Bill obviously does not plan to teach Shakespeare and does not believe the students would be interested in learning it. **A student asks** him about Hamlet, and he says, "You guys don't want to hear about it," but the student **challenges** him, responding, ***"What, I guess we're not smart enough?"*** Bill explains, "It's just complicated," which indicates that he has low expectations for his students, thinking they cannot learn it. However, the student presses on, insisting, "We're here. We're listening." These words really seem to grab Bill's attention, and they change the way he relates to the students for the rest of the semester." (Underlining and bold font inserted to highlight the developments within the dialogue. Font highlights the logical steps within the dialogue.)

While this paragraph addresses the question about the teacher's role, the dialogue encapsulated between the direct quotes from the film and Anna's commentary vividly reveals her thinking about the students' roles. This dialogue follows certain logic:

1. A quote from the movie ["What, I guess we're not smart enough?"]
2. Anna's comment ["...student challenges him"]
3. Description of a specific situation [A student asks him about Hamlet...].

Here is how I see Anna weaving her comments into the quotes from the movie. Anna opens the passage with a statement about the teacher's intentions (didn't plan to teach Shakespeare) and his expectations of the students (didn't believe the students would be interested in learning Shakespeare). To prove that, she enters a particular scene ('A student asks him about Hamlet...') and gives the teacher's quote ("You guys don't want to hear about it"). Her transition to the next quote is done through attributing to a student's utterance a specific function, that of challenging the teacher ('... but the student *challenges* him, responding, "What, I guess we're not smart enough?"). Here it is where Anna captures the tension between the expectations of the teacher and the student's perception of what students can actually do. She elaborates further on this tension by

qualifying the teacher's response as an explanation of his attitude ('Bill *explains*, "It is just complicated"), preparing the ground for a statement regarding the teacher's low expectations of the students' ability to learn. Further description of the situation follows, characterizing the role of the student in this scene. According to Anna, Hobbs is *"insisting"*—"We're here, we're listening"— on that Bill would acknowledge the fact that his students are capable of challenging the teacher's expectation and thinking beyond the 'norms' that are pre-determined by the schooling system. Here this mini-dialogue stops, bringing the reader to its highlight: "These words really seem to grab Bill's attention..."—Anna points at the turning point where the teacher's attitude toward his students changes.

The tapestry of this dialogic description suggests that it is the students' roles that serve Anna as a lens to illuminate on the teacher's changing attitudes. In describing this relationship between the students' roles and teacher's attitudes, she uses the texture of the film—direct quotation framed in the very specific particulars of a situation—rather than using the jargon of a textbook or a classroom talk. Anna is looking closely at what and how the characters say to each other and appears to be able finding easily the relationships among the pieces observed in the film—interconnected and simultaneous. Her ability to make relational conclusions is supportive of the *open* epistemic orientation. A linguistic character of this particular excerpt returned my attention to the earlier consideration of teacher-centeredness versus student-centeredness. A question I asked myself was whether I find here a student-centered epistemic orientation in response to a non-student-related question (Question 1)? What other leads can such a linguistic habit of

a writer suggest? If my assumption is correct, given my considerations regarding teacher-centeredness in the previous section, this would mean that the overall epistemic orientation of this essay lies somewhere on the continuum between the two poles. The focus on the teacher, dominant in the essay, would then simply be a literary approach to writing that stems from the title of the movie, indicating possibly only a moderate teacher-centered epistemic orientation.

Further, the dialogue between Anna's reasoning and her references to the film is also suggestive of *organistic causality* as a plausible description of epistemic orientation revealed in her response. First, Hobbs' question, "What, I guess we're not smart enough," sounds like reminiscent of the expectations and teaching practices imposed on the students by the whole educational system, which Anna mentioned in her first passage. Peaking up on this question seems to be quite significant. By attending to this question, Anna shows her awareness of the fact that the current schooling system is overly pre-determining the students' capacity to learn as well as the ways in which they can learn. Her reference to the troubled educational system in the first passage, the use of Bill's quote "It's just *complicated*" in the second, leading then to her conclusion about the teacher's low expectations of what students can learn, together, reveal her implicit position: a teacher has to relate to the students' actual capacities (or believe in students' capacities) in order for them to learn complicated matters. Anna's capacity of seeing relationships between events, behaviors, and environmental contexts that prevent a rewarding learning experience in schools allows to suggest *organistic causality* as a feature of epistemic orientation found in this student's response.

Conclusion

In this chapter I attempted to illustrate the very process by which the analysis of the students' written responses to the movie led me to make inferences regarding epistemological orientations implied by these responses. To conclude this illustration, I will address the following two questions:

1) What kind of analysis this turned out to be?

2) What characteristics suggestive of personal epistemologies are likely to be revealed in responses to the movie?

1) What kind of analysis this turned out to be?

The analysis of the students' essays dealt with the evolutionary nature of the dimensions of descriptive categories, which kept changing as the analysis proceeded. The best way to describe the development of the categorical schema in this study is to look at it as a two-stage process.

At the *first stage*, I began to find good examples of the students' selectivity patterns and statements that seemed to suggest one or the other epistemic dimension implied by a particular student's response. I started looking at the students' essays very quickly, and as a result of that first glance I have identified initially a set of four binary categories. Thus, for instance, the 'students-centered versus teacher-centered' category came up among the very first candidates for describing my impressions. The first four pre-selected categories were what I looked for when returning to my reading of the essays for the next time.

As I was reading further, a suggestion for another candidate category would come to my mind. Gradually, I came, for instance, to a 'social versus individual' category, so, I could now say: "Here is something that seems clearly present in this student's response, I do not have it as a descriptive dimension yet, but I am going to now add it." Thus, going from essay to essay, I kept introducing the candidates for descriptive categories once there appeared to be a clear exemplification in a student's response. I would then include this category in my analysis of other students' essays as well as see whether it would reiterate. By the time I finished reading all of the students' essays, stage one was complete: I now had an expanded list of binary categories with which I could describe various epistemological dimensions of the students' written responses.

The *second stage* involved going back and reading the students' essays once again, applying the expanded list of binary categories. This time I read the essays using the new lenses that were added during the first stage. Stage two, thus, became the 'reading anew' with this expanded set of lenses. It aimed to identify whether I can find support for some of the epistemological dimensions that I haven't seen in the essays earlier when using the reduced list of categories. In the end, the task for me as researcher was to decide which binary categories appear most frequently.

With such an evolution of the descriptive binary categories, I did not have all of the potential descriptive candidates up front, as a pre-determined categorical schema for the analysis of the data (the students' selectivity patterns and verbal expressions). The overall process of analysis became a type of *multiple iteration*. At each step, I would go

back to reading through the students' essays with an expanded list of lenses to explore whether new important features of the students' responses, which I haven't identified before, can yet to be revealed.

Multiple iteration as a method of analysis has not been my pre-determined choice, but my trust to the emergent nature of the investigation that was unfolding by its own, unique logic. This freedom has let me not to adjudicate that judge as to which particular candidates for descriptive categories needed to be included. Rather, I have allowed those candidates to enter my literary-type analysis as their iconic images appeared on my mind. The iconic images of the candidate categories stemmed from the semantic relationships I found in the essays and were gaining shape within my philosophical excursus. In a long run, such an ongoing, evolutionary investigation process—a type of a naturalistic analysis—paid off, as it helped me shape a richer framework for describing the epistemological orientation of the students' written responses. Admitting to the fact that the empirical approach tested in this study was the first of this kind, it is difficult to think of a more rewarding approach to going about the analysis of the data.

A special note to my reader would be that it was not of prior importance for me, in this study, to distinguish among the *content* of personal epistemologies: beliefs and knowing, teaching and learning, knowledge and source for knowledge, etc. More important was to identify the *constellations* of epistemological dispositions that a person is relying upon within the context, in which I, as an educator, can be of support for his or her developmental needs.

2) Characteristics of personal epistemologies revealed by the students' responses

Table 4 shows characteristics of epistemological dispositions revealed by the analysis of the students' written responses to the movie "Renaissance Man." Some of these characteristics echo the findings reported by other researchers in the field. Thus, for example, the affective dimension as well as the dimension implying internal or external impetus for learning, identified in this study, find some support in the study completed by Pintrich, Marx, & Boyle (1993), which reported on the role of affective and motivational factors in activating conceptual change.[35]

As the first examples showed, even with only four initially introduced binary categories, we are able to reveal variability in students' responses suggestive of their varying epistemological dispositions. The analysis of the complete individual essays provided more evidence for describing of epistemological dispositions implied by responses. The coding schema that evolved in the course of this study suggests conceptual links between stances about knowledge and knowing and other potential elements of the construct of personal epistemology—such as stances about learning, ability and impetus for learning, and teaching. Through such linking, the study offers one possible way to proceed on the definitional problem of the construct of personal epistemology.

The analysis has also revealed interesting methodological challenges deserving attention in the future studies. I discuss these methodological challenges in the following chapter.

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[35] This branch of research on personal epistemologies stemmed from research on conceptual change. I would emphasize only a relative degree of agreement between the findings here, due the difference in conceptualizing the construct (in the study mentioned, epistemology is conceptualized as a personal theory, as opposed to a system of epistemological dispositions in this dissertation).

View of the nature of learning and knowing is:	
1. Teacher-centered	Implies the individual's perception of the teacher as a locus of students' learning. It is a process of transmission of information directly from the teacher—as a carrier of specific information—to the students who play a passive role as recipients. The meaning of what it is that is being learned resides with the teacher(s), and what counts as knowledge (truth) is sanctioned by the teacher(s). The source of knowledge is perceived as located in the teacher(s) who serve as the carrier of information and the transmitter of rules.
Student centered	Implies the individual's understanding of learning as a process in which learners themselves take the initiative to explore opportunities and take responsibility for their own learning. The teacher's role is understood as that of a facilitator of the learners' self-identified activities. The center of initiative is the learner. The learner (knower) is perceived as a possible source of knowledge.
2. Close	Implies intolerance of ambiguity; that is, a response generated by a *single* fixed rule, implying only limited or no alternative interpretations of an event, behavior, environmental feature, or phenomenon. A sense of orderliness and rigidity to interpretation. Relationships can be acknowledged, but are seen as a linear sequence of events, behaviors, environmental features, or phenomena. The rule is implied as describable in finite terms and predetermined by an authority, whose existence is acknowledged and whose dominating role is unquestioned.
Open	Acknowledges the existence of *alternative perceptions,* and the ability to identify relations between alternate ways of viewing the world. Admits multiple explanatory frameworks and allows for configuring partial representations to form complete accounts. An individual revealing such an epistemic orientation is likely to produce relativistic statements (as opposed to absolutistic). Such relativistic statements would likely imply the acceptance of the *interconnectedness* and *irregularity* between events, behaviors, environmental features, or phenomena.

3. Simple	Learning is simple, fast achievable, fun.
Complex	Learning is complex. The learning environment can be ill-structured and sophisticated.
4. Active	Learning (coming to know and understand) demands deep involvement on the part of the learner.
Passive	Learning (coming to know) does not imply deep involvement on the part of the learner. "No matter what you do you are not going to become smarter" (excerpt from the student's essay).
5. Individual	Implies that the activity of sense making is an individualistic enterprise and does not require participation of others.
Social (socially constructed)	Implies that the activity of sense making occurs with and through the company of others. Communication of and sharing the individual's meanings with others makes the process of sense making more effective.
6. Essentialist	Asserts "the ideal forms as an absolute and eternal reality" independent of the knower. Holds that "every particular object has real properties that define its essence, and for every class of objects, a set of properties defines the possibilities of that class (its essence)."[36] The 'eternal reality' is presumed to adhere to a common core of meaning, or to a standard. Looks at means, central tendencies, and the common denominator. It does so often at the expense of attending to unique characteristics of the individuals, or likewise, without respect to the particular nuances of the contexts influencing the individual's learning.
Particularistic	Implies sensitivity to idiosyncrasy. Implies the perception of knowledge as socially constructed. Attends to the particulars of knowledge in relation to contents, contexts, and processes, and not necessarily expect that the origin and standard for knowledge are known.

[36] Formulated by Aristotle [384-322 B.C./1975] and Aquinas [1225-1274/1970] (in Fitzgerald & Cunnigham, 2002, p. 217).

7. 'Cold-minded' (merely intellectual)	Learning (knowing) is purely an intellectual enterprise, and justifications for personal beliefs should be *reasoned.* Emotionality and intuition are unlikely to be attributed any real significance in the process of learning (coming to know). Learning (knowing) is driven by the predicted outcomes, and accounts of reality are factual and objective.
Intuitive/Aesthetic/ Affective	The specific qualities of a learning experience (coming to know) are taken into account, and ways of knowing other than intellectual reasoning are acknowledged. Attends to the *emotionality* attached to learning experiences and the processes of meaning making. Accepts the unreasoned, but rather *'sensed'* (i.e., felt, seen, heard, imagined) justification for his/her personal beliefs and understandings. Appreciates learning for its own sake. Implies the ontological concern with, and the acceptance of, *what exists*, when the parts of the whole (this and that, here and there, subjective and objective) are inseparable and essential.
View of the nature of learning and knowing implies:	
8. Mechanistic causality	Implies the causal relationships between events, behaviors, environmental features, or phenomena as *linear* and *predictable* with high degree of certainty: all one way *or* the other. This orientation implies an understanding of learning and development as a linear process, in which mutual effects are compartmentalized.
Organistic causality	Implies a more holistic view of the relationships between events, behaviors, environmental features, or phenomena. Learning and development are understood as *a web* of probabilistic relationships. Implies synthetic integration, as well as *simultaneous* interconnectedness and interdependency among the events, behaviors, environmental features, or phenomena. We anticipate to find in this individual's interpretation the recognition of a pattern between the relationships, rather than a linear sequence—*a configural pattern*, which is likely to be revealed through an image (a picture, for instance).

9. Internal impetus for learning	The impetus for a continuous act of following the track of something the individual is trying to understand (a target of reflection) resides within the learner. The activity of sense making is perceived as realizing, growing, fulfilling, learning.
External impetus for learning	The impetus for the act of following the track of the target of reflection (activity of sense making) is external to the learner. Such impetus resides in the external social and/or material environment.

Table 4. Characteristics of epistemological dispositions described by binary categories.

FIVE

'Where the Wild Things Are':

Working with Ambiguity in the Study of Personal Epistemologies

> I have gone on piling up ambiguities on to particular cases till the 'whole thing' becomes absurd; 'you can't expect us to believe all that.' I have, in fact, been as complete as I could in cases that seemed to deserve it, and considered whether each of the details was reasonable, not whether the result was reasonable as a whole.
>
> (William Empson, *Seven Types of Ambiguity*)

Though not all of the interpretations of the movie offered by the students were as rich in details and explanations as I would like them to be, William Empson's approach to reading ambiguous poetry encouraged me to go on with the students' descriptions and justifications. The responses were variable enough to afford insights into their underlying epistemological orientations. This chapter discusses some of these insights, as well as methodological challenges I encountered during the analysis. It was within the mist of the grappling with these challenges that some of my speculations on the ontology of the construct of personal epistemology were born. These speculations will conclude the chapter.

Epistemological behavior 'beyond the threshold of awareness'[37]—What does it look like?

Examples illustrated in the previous chapter help us understand the epistemological orientation, underlying the nature of each individual student's response to the film "Renaissance Man". The described literary-type analysis of these responses

revealed a variability of interpretations of one and the same movie. It is important to keep in mind that the responses were open to the students' choice of representational form and genre. In the previous chapter, we saw how the students shaped the form of their interpretation by the selections they made, and by referencing and emphasizing that which resonated with their thinking. The respondents did not have clear norms of self-presentation like the ones that a checklist would prompt: I did not ask my students to 'check' the boxes on a questionnaire, although I did provide, as an option for them, a list of guiding questions. In fact, we saw how the form of interpretation was created by the students in their responses: students chose to follow or not to follow the instructor's questions, their references and sequencing of the selected events and behaviors emphasized one scene but not another. Such authorship in creating the representational form of response made the students' projections onto their perceptions about knowledge and knowing more visible yet contained no indication of their thinking about what 'pre-figurative schemas' (Spiro) are 'responsible' for their perceptions.

Let me illustrate this thought by comparing the form of the responses described in the previous chapters to the one in which responses would be ordinarily anticipated in a questionnaire or survey-type study. Items on a questionnaire—such as, for example, "I don't like movies that don't have a clear-cut ending," or "A good teacher's job is to keep students from wandering from the right track"[38]—would likely constrain the respondent's reasoning path by fencing it between the two rails, 'Yes' or 'Now.' Both of these statements explicitly ask of a person which of the two rails the person stands on (or, given the Likert-type 5-option scale, which of the two rails is the nearest to the

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[37] R. Arnheim. 1985, p.79.

individual's perception of the answer that best matches the expected of him/her). When given survey statements in such an explicit language that directs the respondent's attention to his or her preferences of 'good' teaching or 'effective' learning, the respondent is likely to be aware of the implied 'rails' that are expected of his/her response. The respondent's reasoning, in these terms, is rather mechanistic, as it is prompted to follow the form of the 'rails'—one of the two possible sides (or an approximation to one of them on a Likert scale). The form, as well as the language of the response, is pre-determined by the survey item.

Compare the above statement from a questionnaire to a question on the instructor's list used in this study. The questionnaire item—for example, "A good teacher's job is to keep students from wandering from the right track"—essentially asks the question: Which one [of the rails] do you prefer better? Such a question implies an epistemological concern with *'What do you know* [about this rail or that]*?'* The questions that I gave to my students as optional in this study—for instance, 'How could you describe Bill Rago's teaching philosophy?' (Question #5 on the instructor's list)—ask of respondents a different question: *'What [do you think] exists?'* The questions like this are of an ontological concern and offer less direct cues and more room for personal epistemological dispositions to wander.[39] I intended these questions not to impose the procrustean rail for a student to match his/her reasoning, but, on the contrary, to offer

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[38] Statements taken from Wood and Kardash's factor analysis of the 80-item scale comprised of Schommer's, 1990, and Jehng's, 1991, survey (in Hofer & Pintrich, Eds., 2002, p. 247).

[39] Understandably, if I did not give the students any questions at all when they watched the movie, the task would have become even looser and thus yield richer 'activating' of various epistemological dispositions that might have been involved into the interpretation process. However, limited to the duration of one class meeting and combined with the current tasks of a regular class work, the completely unstructured assignment of this kind would probably be much less manageable, if at all possible.

each student the opportunity to explore any interpretive destinations that resonates with their reasoning.

One might argue that, in this study, the interpretive destinations that the unconscious 'self-questionnaires' of my students reached on the way to making sense of the movie, are limited to "language', 'roles,' 'communication, 'motivation', and 'teaching philosophy', as articulated by the five optional questions on the instructor's list. It is important, however, to take into account the difference between the ranges of the respondents' epistemological dispositions involved in the two different tasks. While responding to a traditional survey, the individual attends to the expectancy of his/her "best match" articulated in the form of a Likert-scale. The content and the range of the 'match' are well defined, and the 'persona of the audience' (Sadoski & Paivio, 2001) is quite explicitly present here. On the other hand, while interpreting an ill-structured theme of teaching and learning in the 'non-instructional' movie "Renaissance Man," the students had to decide for themselves what the *content* of that 'match' would be. In this case, therefore, the shift in writing to the 'persona of the writer' was more likely to happen.

The metaphorical expressions and richer vocabularies incorporated in the students essays are particularly revealing in terms of such contents. Images of the 'teacher-baby-sitter,' the 'student-clown,' the teaching as 'shoveling up the students' minds,' the 'rhythm and beauty' and 'the poetic flow' of the Shakespeare's language are unlikely to appear in a survey-type response. The survey item lacks the potency of contextual nuances that give birth to metaphorical associations, and thus provide a target for a complex reflection. A choice of agreement/disagreement is limited on a Likert scale. The

variability of linguistic characteristics and selectivity patterns in the students' written responses allows me to suggest that, unlike the 'rail'-width of a survey item, the 'bandwidth' of the individual's perceptual repertoire involved in the sense making process in this study is determined by the respondent him or herself. More so, this 'bandwidth' is more likely to be wider; and so is the range of epistemological orientations underlying the process of meaning making. It is the respondent who is to configure, though, perhaps, not consciously, the entire terrain of his or her perceptual horizon, thus authoring the whole production of the response from the beginning (associating with and bridging the available epistemological dispositions to certain features of the stimulus) to the end (articulating his/her reasoning in writing). While responding to the "Renaissance Man," the students had to configure the film elements related to the issues of knowledge and learning into a meaningful whole relying on their own repertoires of ideas, vocabularies, and associations that they, themselves, would attribute as relevant to 'knowledge' and 'learning'. No 'rails' were given to match.

One hidden aspect of the measure in this study is that the students were to construct, in the researcher's jargon, their own 'questionnaires' or 'surveys' with regard to the movie for themselves. These 'self-surveys' had to include specific 'items'—selectivity patterns for choosing scenes, behaviors, and characters. The students were not aware of this task, nor were they even thinking that this was a task they were to fulfill when they were interpreting the movie. By asking students to write their response in an open-style format, I assumed that if the style and genre of their writing, as well as the targets of their reflection, were open to their choice, they would be less likely to

consciously deal with the issue of the 'either/or/near'- positioning on a 'rail.' There was no external impetus (no such markers in the movie), such as a direct question "Which one do you like better?", to box one's reflection into a specific geographical location on the epistemological plane. On the contrary, the students' perceptual horizons carved out their individual 'self-surveys' and 'survey items' inadvertently in the responses they made while making sense of the movie. The selected scenes, episodes, and behaviors in the movie became those 'self-survey items,' while no clearly marking 'railroad' was provided to restrict the interpretation of those scenes, episodes, and behaviors.

The question to ask is: How do we know what those 'self-surveys', and their items—selectivity patterns—are? They revealed themselves through the choices of words that the students made, the writing styles they came up with, and the ways in which they organized the text. The selections that the students made from the movie and the way they talked about these selections made the students' perceptual lenses visible to me as researcher. I feel that the approach I tested offers a promising lens for eliciting personal epistemologies. As we could see in the examples of the traditionally used survey items above, the structure and language embedded in a survey can inadvertently focus the respondents' attention on the pre-figurative schemas responsible for his or her taking a particular 'side of the rail.' In other words, a respondent is limited to a *form* of reasoning, which he or she did not necessarily author. This way, the researchers limit the perceptual horizons of their respondents that, potentially, might otherwise be elicited.

From this perspective on epistemological behavior, we might assume that by letting individuals write in response to an ambiguous stimulus 'as they please', we could elicit the wider ranges of the horizons at which the individuals' personal epistemologies

reside. By letting the respondents find their own themes in a text that provides an ambiguous theme as a target for reflection, and letting them also find their own genre and vocabulary to express what those themes are, researchers gain the opportunity to reveal the wider perceptual horizons of their respondents. The findings of this first-time tested approach to eliciting personal epistemologies allow me to speculate in favor of this perspective.

On a Humanistic Note

An open-genre response does not only make it harder to predict the 'best matched' answer, but also makes the process of writing more informal, if compared to a questionnaire, for example. Earlier in the excerpts, we saw how students, while expressing themselves informally, reveal their *affect* and *attitudes*. For example, many responses revealed attitudes toward the role of self as learner. The notion of self is likely to be revealed through the emotionality of the respondent's writing. My students were writing about the student-soldiers in the movie 'finding faith in themselves,' 'believing in themselves,' being 'passionate risk-takers', 'opening up their own lives,' and 'being stunned.' It seems reasonable to suggest that this vocabulary, perhaps, served, in turn, as an additional stimulating context for their major target of reflection, that of teaching and learning.

We can make sense of the epistemological 'width' of the individual's horizon by attending to the range of themes he or she identified within the process of interpretation of the movie. In addition, the amount and qualities of references he or she found in the

movie, then used in articulation, present yet another piece of evidence for a researcher to use while attempting to understand the individual's perceptual horizon.

At the same time, the approach undertaken in this study presents a discrete measure in the sense that the respondents are unaware of the fact that they are being questioned, as if in a special interview (described in Ch. 3), regarding their perceptions of knowledge and knowing. In other words, the 'interviewee' does not know that the 'interview' takes place. Nor is the 'interviewee' aware of that the interviewer is 'two-headed'; that is, that he/she is 'interviewed' by the intricacies embedded within the text of the movie on one side, and the teacher-researcher with her lens for reading the interviewee's essay on the other. By doing the evaluation indirectly, we thus gain the potential of eliciting a wider range of the essential qualities of personal epistemologies.

The possibility for the respondents to express their emotionality associated with the movie, the authorship of the interpretive themes, and the minimal involvement of the researcher, together, make this approach to eliciting personal epistemologies more humanistic. It becomes more finely tuned in the individual's essential epistemological dispositions than a questionnaire or a survey.

Methodological Challenges Encountered within the Analysis

The analysis of the findings elicited several methodological issues. Essentially these relate to issues of attribution of the qualities of response to a particular binary category in the context of a fluid descriptive schema, the new types of analytical lenses emerging as the analysis unfolds, and issues of conceptualizing the findings.

1. The challenge of attribution: Dealing with the emergent descriptive schema

One paradox I dealt with was in handling the immediacy of making an attribution to a specific epistemological orientation while keeping up with the evolving categorical schema. More specifically, often my decision to attribute a binary category to a specific epistemological orientation at one given moment would have been effected by the next move on a cycle of analysis. New dimensions added along the way to the descriptive schema kept me revising earlier decisions as the analysis proceeded. While emergence is expected of a naturalistic study, the mutation and recombination of my descriptive categories made this inference process even more fluid, given that the entire descriptive schema was being born *along* with the progress of analysis. Specifically, the analysis of each essay dealt with certain structures, characteristics, and logic of the respondent's written text that defined which binary category the epistemological orientation of the essay might be attributed to. As the analysis proceeded, some of the earlier attributions should have been revised based on the insights that entered my interpretive process later, during reading other students' essays or during later iterations of analysis. What once appeared in the form of a preliminary finding, later evolved into an analytic tool.

This is not to imply, however, that every researcher intending to try a similar approach for eliciting personal epistemologies will have to go through the same labyrinth. The binary categories included into this report appear to be good candidates for use in future studies, as they promise useful insights regarding personal epistemologies, especially when applied to more diverse samples and in various contexts.

I will now illustrate some of the conditions identified by this study necessary for describing the epistemological orientation as might be suggested by an individual essay.

Following are two examples of using the contents. structures, and logic found in the essays as textual markers for making inferences about their epistemological orientation.

Did the instructor's questions contaminate the data?

One binary category that received particular attention in the analysis defined learning viewed as '*teacher-centered*' versus '*student-centered.*' The problem with attribution was in that students might have talked about the active student-soldiers' role (in the movie) while evidently responding to the Question 2, "What role do the students ... play as the course evolves? ..."— the students have either directly indicated their reference to this question in their essays, or the sequencing of the contents of their essays gave enough evidence to suggest that this question was in fact kept in mind. Similarly, the students might have emphasized the active role of the teacher in the soldiers' learning, while, evidently, they were responding to Question 1: "What role(s) does the teacher play as the course evolves?..."

I envision a criticism arising from the presence of these optional instructors' questions: *Did the instructor's questions contaminate the data?* Indeed, these questions might have predetermined the way the students approached the writing of their responses. Some of them, indeed, followed this sequence: they wrote about the teacher motivation first, then they wrote about the students' motivation second, and so on. So, one might assume that there might be a contamination in my interpretation of the data. It is important to note here that, despite the fact that the questions from the instructor's list might have pre-determined the focus and sequencing of the student responses, I assume that this matter does not affect the validity of the findings. The ground for such an

assumption lies in the students' own choice of the form and contents of their responses. Even if a student chose to use the instructor's questions in his or her essay, it was up to the student to decide which question(s) to answer, in which sequence, and for what purpose. This freedom of the students' choice of form and content with which to respond allowed for variability in the responses sought to serve the purpose of this study.

An important methodological cue, that I learned from the necessity of taking into account the presence of the instructor's questions, is based on the following proposition. The fact of taking a student-centered stance in response to a student-related question from the instructor's list should not be credited as student-centeredness of the epistemological orientation. Likewise, the fact of taking a teacher-centered stance in response to a teacher-related question, alone, should not be credited as a provisional category for epistemological orientation of the response. Rather, a specific category for epistemological orientation will be suggested if a respondent takes a student-centered stance in response to a teacher-related question, or a teacher-centered stance in response to a student-related question. In addition, in order to classify an epistemological orientation of the respondent's essay, even provisionally, as *teacher-centered* or *student-centered*, there should be strong, corroborating evidence of such stance elsewhere within this individual's essay (or other work created by the student over the course).

It might be useful, however, to eliminate such a pre-determining factor as instructor's questions in a future study to provide for wider variability in responses. I would also suggest that respondents take more time and write as much and as long as they so choose.

More on the textual markers

Another example shows how characteristics of the text reveal inconsistencies between the students' interpretations of the movie and the intentions of the movie creators, thus providing additional lens for analysis of personal epistemology. Binary category '*Open* versus *Determinate*' was particularly instrumental in eliciting such inconsistencies. Again, the theme of teaching and learning does not have clear markers in this movie as to what gets learned, how it is taught, where does teaching start, and where does learning go. It is left for a spectator to decide. At the same time, the plot of the movie has always emphasized a spontaneous, accidental character of events and interactions among the characters. Therefore, whenever I saw the progression in a respondent's essay that seemed to imply inevitable and determinate steps, I had to admit that this individual's interpretation is at odds with the less sure progression in the movie, and, thus, its epistemic orientation can be described as rather closed, or determined. For example, Bill's explorations in teaching that emerged quite spontaneously and happened often to his own surprise, are portrayed by Hannah as if, though, 'loosened-up,' as she puts it, he followed a prescribed routine, since he still '*utilizes* scaffolding methods of instruction.' 'Utilizing' implies following a 'model,' or acting according to a 'plan.' There is no such 'plan' in the movie. The happenings in the movie are spontaneous and unpredictable, not intentional at all. Hence, the epistemological orientation of Hannah's essay seems reasonable to be described as 'determinate' or 'close.'

The process of attribution of the respondents' epistemological orientation to a particular binary category will benefit from including for consideration the information on the students' backgrounds. It is likely that the special value college students put on

teacher authority and a well-structured curriculum is due to a particularly 'comprehensive' upbringing in their homes and schools. If their K-12 schools or families have been long emphasizing a single way of disseminating knowledge—'What did the teacher tell you to do for a Monday class?'—and practicing a discrete curriculum in which disciplinary units seldom intersect, students would most likely judge much of what they see in the movie against this prior experience of their own and its implied notion of knowledge and learning—perhaps, the only one that they professed so far. The students' prior experience with the kinds of knowledge dissemination that they were introduced earlier in their lives would certainly affect other dimensions of their epistemologies as well, which might get or might not get involved into the making sense of the "Renaissance Man." The attributing of the particular binary categories to certain epistemological orientations would thus be fuller if taking into account this background information about the students. Although I did collect information related to the students' educational background, their academic majors, as well as some learning skills, such as, technology literacy skills reported before the measure (before the session when the "Renaissance Man" was watched), the collection of this data was not tailored to the schema of the binary categories so that this data could be included into descriptions of their epistemological orientations. The schema did not exist at the time. In a future study, however, such data should be considered as secondary for making inferences regarding epistemological orientations at the advanced phase of the analysis.

'Epistemological orientation' or 'a writing habit'?

A writing habit was yet another important, but rather diluting, characteristic of the text in individual responses. A student might, for instance, choose to use active verbs that strongly emphasized the authority of the teacher, thus, implying the locus of knowledge and judgement for rightness: "Once the students were interested he allowed them to express themselves through rap music and dance." Would this statement be indicative of poverty of the student's vocabulary or of a 'teacher-centered' personal epistemology? Linguistic habits of the respondents may 'contaminate' the researcher's interpretations of the findings, imposing a *production component* onto the quality of the data, which may vary from a student to a student. This production component would be different from the epistemological in that it is not a product of a specific reflection. It can be equally present in several texts that an individual produces in response to different stimuli, that is, when the target of reflection changes the linguistic habit may stay the same.

The above example of a teacher-centered statement in the case of young undergraduate students, particularly freshmen, is likely effected by both factors: the poverty of vocabulary *and* a teacher centered epistemology. The latter, as I mentioned earlier, is often influenced by the students' K-12 experiences.

One way to deal with linguistic habits of respondents is by juxtaposition of the data, which document work completed by an individual respondent in various forms and genres within similarly loosely structured tasks throughout the semester. An example of such tasks can be a visualization of the individual's thinking of learning and knowledge (similar to the mid-term 'Map of Connections' the students had in my class). Or it can be

a performative act as part of a special interpretive project (such as, teaching a topic to peers, in which only a broad theme suggested by the instructor, while the specific contents as well as the genre of presentation are open to the students' choice). It can be other writing projects as well. Dealing with linguistic habits and production components would require examining the students' written responses developed in various contexts. Such an expanded contextual ground for analysis would imply alterations in combining various domain-specific instructional contents with varying kinds of stimuli used as projective devices for the same sample of respondents.

The next section shows one more finding of the analysis that can also help in dealing with the respondents' writing habits. Analysis of the essays revealed that some of the scenes in the movie could serve as independent projective devices helping elicit the respondents' epistemological orientations—a kind of 'Rorschach-within-Rorschach' test. Similar function can be performed by the theoretical concepts introduced earlier in class, before we watched the "Renaissance Man." The refinement of 'Rorschach-within-Rorschach' tests can also help dealing with the respondents' writing habits, as it allows for finer, and more fair discrimination between epistemological orientations of the students' responses by revealing variability in the students' interpretations of the same stimulus.

2. The emergent Rorschach-within-Rorschach tests

I anticipated the movie "Renaissance Man," or, more specifically, the theme of teaching and learning encapsulated in it, to serve as projective means eliciting the students' epistemological positions, that is, to serve as an analogue to Rorschach test. I was challenged by two more such 'tests' that the students' responses to the movie revealed. Apparently, there were essentially three stimuli within this same interpretive task that the students had projective reactions to:

1) The entire text of the movie "Renaissance Man" with its implied challenges of "*What* is learned?" and "*How* it is learned (and taught)?"
2) Particular episodes in the movie that especially caught the students' attention and were referenced in the essays most often.
3) Some of the psychological theories of learning and development introduced earlier in class.

Scenes of the movie as Rorschach-within-Rorschach tests

As we have seen in the illustrated cases (Erin, Tracey, Sam, Jennifer, Paula, John, Anna), some scenes in the movie might serve as Rorschach-type tests themselves, independently acting within the larger Rorschach test—the movie as a whole. These scenes can provoke multiple interpretations on the part of the respondents, revealing various epistemological orientations. We have seen the examples of two such scenes: "Rhythm" and "Rap". As I have suggested earlier, the nature of grasping the essence of the text either through its own rhythmicity or through a rhythmical repetition of excerpts from the text seems to be underlining both of these scenes. Therefore, I have united both

of these scenes under one label of a "Rhythm"-scene. This composite scene appeared to serve as a Rorschach-within-Rorschach test, eliciting varying interpretations from the students. As illustrated in the previous chapter, some students interpreted rhythmicity as a *memorizing* tool (Paula, Tracey), others saw it as a means for making learning *fun* (John), while for others (Anna) the *beauty* of Shakespeare's language was internalized through its '*internal rhythm.*' The linguistic choices made by the students revealed the meaning that they made of the role rhythmical repetition, rhythmicity play in learning. These choices lead me to use the following categories for describing the epistemological orientation which seemed suggestive of the reference to the scene: learning appears to be viewed as 'cold-minded', anti-aesthetic (as suggested by 'memorizing'); 'simple' (as suggested by 'fun'), and 'aesthetic' (as suggested by 'beauty' and 'internal rhythm'), correspondingly. So, if we look for such scenes that many respondents pick up on, we can reveal variability of interpretations suggestive of the varying epistemological orientations.

Theories of Educational Psychology as Rorschach-within-Rorschach tests

Reading the essays, I have encountered misconceptions some students have of the theoretical frameworks introduced earlier in the course. We may find, for instance, the Vygotskian theoretical propositions of learning presented in a rather closed, determinate way. In other words, the theories introduced in class can serve as Rorschach-type tests too. As much of the literature suggests, what students learned is influenced by their epistemological position. For example, the Vygotskian framework of learning and development might have been interpreted by a student as a more mechanistic and

determinate model, rather than as a loose network within which exchanges between participants are non-linear and pre-determined. Or a student might refer to a behaviorist, stimulus-response Skinnerian theoretical framework of learning and talk of it as open model rather than close and linear. Therefore, in my analysis I paid attention to the type of references the students make to the theories.

In connection to theories introduced in the course, a special comment should be made regarding the ambiguity of the temporal and structural organization of the course. The theoretical concepts were often introduced through the lenses of the students' own experiences and understandings. At the same time, these lenses were influenced by the evolving contexts of the course as it was unfolding. The loose structure of the instructional materials and environments characteristic of this course, in my view, should not affect the validity of the findings. Rather, it is beneficial for a researcher in that it potentially gives a researcher more variability in students' responses. If the students learned the theoretical concepts through a more direct support from the instructor (i.e., received more straightforward interpretations of the conventional vocabularies generally accepted in the field), there would have not been enough room for variability in the students' responses. The students would not have had to apply their own lenses to interpret what they saw in the film, because they were more likely to be 'boxed' into the 'right answer,' cued by the more direct instruction.

In addition, the placement of the measure of personal epistemology in the very context, in which epistemology is supposed to be applied, is also for a benefit as it has the potential to take into consideration the contextual aspects of such application.

3. The challenge of 'epistemological uncommitment'

In the previous chapter, we could see how the text of one and the same response may suggest both poles of a binary category at the same time. This observed 'epistemological uncommitment' led me to consider two phenomena as possible explanations of this situation. One explanation would be such that we might deal here with the individual's *epistemological style*—a unitary[40] component of cognitive structure that a person does or does not possess and, if he/she does, stays stable in various contexts.

The second explanation suggests that what we reveal in the students' responses is a manifestation of *competing epistemological systems or dispositions* that are simultaneously present in one's cognition in each and every context, but are 'activated'—that is, can become available— differently in different contexts. Such activation of epistemological dispositions also depends on the kinds of experiences that a person had in the past—lets call it experiential knowledge. So the paradox a researcher grapples with here is in handling the competing explanations to offer the best inferences possible regarding personal epistemologies: Are we dealing with one or another—*epistemological style* or a certain dimension of *epistemological dispositions*? I speculate further below about possible answers to this question.

The fact is that sometimes, during reading a student's essay, I found it confusing to attribute its epistemological orientation to either pole of a binary category when such a category appeared to be a good candidate for description. In other words, in the same response, there might have been evidence found that seemed to equally allow for

attributing the epistemological orientation of this response to both poles of the same binary category at the same time, as if the poles did not possess mutual exclusivity. Let me illustrate this situation.

In the analysis of Anna's essay, for instance, I found it quite possible to interpret an excerpt from her essay with the help of both opposite poles of the same binary category, simultaneously: 'organistic causality' and 'mechanistic causality.' In this essay, the teacher appears to be influencing the students; then the students are doing something that, in turn, influences the teacher:

> A student asks him about Hamlet, and he says, "You guys don't want to hear about it," but the student challenges him, responding, "What, I guess we're not smart enough?" Bill explains, "It's just complicated," which indicates that he has low expectations for his students, thinking they cannot learn it. However, the student presses on, insisting, "We're here. We're listening..."

This might be seen as a family of events or mutual influences that are bouncing off of each other and, therefore, might imply an *organistic* epistemic orientation. At the same time, this sequence seems to be happening as if on a timeline, chronologically. First, Bill, the teacher, says something in the classroom. This causes his students to react in a certain way: "Why? We're not good enough..." The students' reaction then causes the teacher to think about the students' motivation. Time moves on. Each event causes the next one. Epistemologically, therefore, this sequence can also be described as *mechanistic*. The linear sequantiality implied by this student's description undermines the organistic

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[40] I am borrowing the term 'unitary' from the framework proposed by Hammer and Elby (2002) and am using it here in a sense that epistemological style might be perceived as a unit corresponding to a specific cognitive structure and remaining consistent in various contexts.

'impression' we might have gained from this passage. The response does not prove that it is mechanistic, at the same time it seems to weigh slightly against its organistic quality.

We see thus that both polarities of the same descriptive category can be drawn from the same response. What this may mean is that, while reflecting on the movie—while making sense of a complex chain of interactions between Bill Rago and his students-soldiers—a respondent's mind might 'migrate' back and forth between the polarities within the same dimension of the epistemological orientation. This observation reminds me on the inconsistency of the participants' reasoning which was revealed by the evidence from the interview protocols in the studies of students' misconceptions of physics (deSessa, 1993; Smith, diSessa, & Roschelle, 1994). In fact, the initial conceptual framework in these studies, based on the model of students' understanding of physical phenomena as misconceptions (or 'wrong beliefs'—unitary traits), implied as given a consistency in the students' reasoning. So, apparently, I did expect to find a fair consistency of representation for a particular dimension of epistemological orientation within an individual response. As Anna's case exemplifies, my 'film'-interview protocols—the respondents' reflective essays—contradict such an assumption, revealing a kind of an 'epistemological uncommitment,'[41] instead. This observation is of particular interest as it illuminates the ontology of the construct presently in the focus of the heated theoretical debate among researchers of epistemologies. Perhaps the ontology of this construct can, indeed, be described as a system of cognitive dispositions, which is inconsistent—activated and becomes available differently—across the targets of the students' reflection.

[41] The idea of the lack of 'epistemological commitment' was suggested by Rand Spiro.

We can assume that 'epistemological uncommitment' can be explained in terms of changing contexts, and correspondingly, the shifting target for reflection. Let's go back to Anna's text: Students-soldiers "make sense of the Shakespeare text through their own life experiences and individual languages" that "makes it easy for them to grasp the meaning of the text." To Anna, meaning making, I read, is enabled through various senses and in various possible ways, including those mysterious ways that one can not explain otherwise but 'grasping.' The word *grasp* means to hold intellectually, to comprehend. We often use it to highlight the vagueness and intuitive nature of the process of comprehension. It also means to *accept.*[42] There is a configural 'flavor' to the word 'grasping': sense making happens through a miraculous juxtaposition of 'life experiences' and 'languages,' which interact in ways that imply relationships between the experiences and languages occurring simultaneously and accepting multiple directions in which they might go. So, it gives an organistic feel to the whole statement. Add to this Anna's sense 'of beauty' in learning and the grasp of 'rhythmical repetitions' within a poetic text and it seems like the target of her reflection is the entire *field* of possible human interactions with the world.

At the same time, when Anna describes a scene of student-soldiers' resistance, 'Why, we are not smart enough...,' she follows minute details within the dialogue, as if separating the individual mini-events—(1) a students steps in, (2) the teacher responds, (3) another student steps in, (4) the teacher responds differently, (5) the student claims a protest, and so on. The target of Anna's reflection here appears to be located within a micro-cell of the movie plot, with its mini-sequence of very specific behaviors of

[42] A game with words attempted here is supported by the American Heritage Dictionary of the English Language, New College Edition. Edited by W. Morris, 1978. Boston: Houghton Mifflin Company.

characters, and condensed in a very short time. Her reflection allows Anna to 'grab,' as she puts it, the turning point in the change of the teacher's attitude:

> ..."We're here. We're listening." These words really seem to grab Bill's attention, and they change the way he relates to the students for the rest of the semester.

The mini-events occur within the dialogue on a temporal line, in a clear sequence and, therefore, by definition accepted in this study, can be described epistemologically as characteristic of mechanistic causality (mostly because of the linear sequentiality). The word *grab* implies abruptness, it associates with action or process that occurs suddenly—at certain point in time—in order to capture and keep unchanged. After all, grab also stands for a mechanical device for gripping an object, which is available to everyone to take. In other words, the *grabbing* has clear-cut edges in space and time. It seems reasonable to suggest that a semantic move within the text of the film—the turning point in teacher's attitudes—acts as an independent context for reflection. This context has captured Anna's attention in such a way that to force her epistemological repertoire to release a particular resource (or dimension), which enabled her to make sense of the turning point through a correspondence with the semantic essence of the *grabbing*. In other words, as a result of interaction with the movie, and, specifically, with a particular context of the scene, Anna inadvertently focused on the essence of the grabbing in order to make sense of —and to express in words—the observed scene. The 'mechanistic' ontology of the grabbing becomes thus a target for her reflection within the context of this particular scene.

Putting the two examples from Anna's text together, we see how one and the same response reveals the opposite poles of one and the same dimension of epistemology—an observation we called earlier 'epistemological uncommitment.' By analogy with quantum physics, where a particle has the properties of a wave and the wave can assume the properties of a particle, we can explain 'epistemological uncommitment' from the perspective of epistemological *dispositions* or *resources*, which can be described by similarly ambiguous properties. Like the wave-particle phenomenon, the particular dimension of epistemological dispositions has a property of manifesting itself as located at one or the other pole depending on the level of technical precision—the complexity of the domain—at which it is applied. Talking in terms of 'causality' as epistemological dimension, the solving of a basic arithmetic problem—A+A=2A—would be enabled by a 'mechanistic' pole of this dimension. Dealing with the rescuing of a patient under a heart attack would activate the surgeon's epistemological dispositions in the opposite pole of the same dimension (most likely, several other epistemological dimensions will be involved into the solving of such a complex task). To put it differently, epistemological dispositions get activated differently in varying contexts as the target of the respondents' reflection shifts. By using the two examples from Anna's essay, I tried to portray such shift of the target of her reflection from one context to another, within the same visual stimulus, in which the scenes of the movie play the role of independent contexts—or independent projective devices—capable of triggering varying epistemological dispositions.

The question is whether this becomes too microscopic an analysis. Perhaps, it is the sensitivity of response analysis to the moment-to-moment shifts in the viewer's focus of reflection as well as to the contextual cues on those shifts that can support the very perspective on the ontology of the construct of personal epistemology.

Contextual Factors, Intuitive Understandings, and Individual Differences

Sensitivity to shifting of the target of reflection and the contextual nuances appears to be particularly critical for defining whether personal epistemology is a 'system of dispositions (or resources)' activated and applied differently in differing contexts, rather than a 'theory' or 'belief,' which stays consistent from one context to another. As Lising and Elby (2002) suggest, it is the inconsistency in students' epistemological 'beliefs' in various contexts that can count as evidence for epistemological resources at the expense of beliefs. Comparing oral responses of the high-school students' during the clinical interviews to those received within the context of the physics class, they claim further that patterns of such inconsistencies are context-dependent and can be predicted. The context-dependency suggests, in turn, that personal epistemologies are not the stable units of cognitive structures to be simply developed (substituted) from 'misbeliefs' into the expert-type 'beliefs' or 'theories,' expected then to 'work' whether in the 'real-physics' context of a physics lab or within a clinical interview about physical concepts.

Thus one potential research agenda would be to attend to the details sensitive to shifts in the target of reflection, which may provide confirmatory evidence of the contextual cues that trigger differing epistemological dispositions, if at all. Such research

would help deal with the "fundamental attribution error" (Wortman, Loftus, & Marshall, 1988), the tendency to attribute a person's epistemological behavior—the way he or she thinks about knowing and knowledge—to a general trait (such as 'belief' or 'theory') when contextual factors vary and influence this behavior.

Hammer and Elby (2002) advocate in favor of the framework of epistemological resources. I challenge their approach in one particular aspect: these researchers overemphasize, in my view, a conscious judgment as manifestation of certain epistemological resources (or dimensions) applied within a particular context. In this sense, they follow King & Kitchener's (1994) conceptual framework, which their article (Hammer & Elby, 2002) critics. While the framework suggested by Hammer and Elby admits the influence of 'inarticulate knowledge' and 'intuitive epistemology' in a content area, the actual approach these researchers suggest seems to overestimate the role of 'cold-mind' reasoning and understanding. These researchers describe their inquiries in personal epistemologies as approached in a straightforward manner, by asking their students direct questions and suggesting 'formal protocols to reveal adult epistemological competence" (p. 184). As I argued earlier, a direct approach to eliciting personal epistemologies 'talks' rather to the individuals' awareness of the nature and objectives of the test and their perceptions of what is expected of them. Even within the context of a disciplinary area, such as a physics course, in which certain 'epistemological resources' are supposed to cue certain ways of thinking about physics, a straightforward question about understanding of physics, while directing the respondents' attention to the topic of the researcher's interest, still carries along the respondents' assumptions, if tacitly, about

the 'best' possible responses they ought to be providing. The intuitive understandings, along with the epistemological dispositions, which support such understandings, are likely to be left beyond the investigation.

The second point I would like to make regarding perspective of epistemology as resources relates to the necessity to account for individual differences. I was not able to find in the literature that the actual account of individual epistemological resources has been successfully accomplished. While I find the Hammer and Elby's (2002) framework of manifold ontology of epistemological resources quite promising for illuminating on the contextual origins of epistemological development, I don't think these researchers offered a way to account for individual differences.

The study completed within this dissertation attends to both of these issues. It is done within the context in which epistemological dispositions responsible for thinking about knowledge and knowing in a teaching profession are supposed to be applied. At the same time, the findings of the study do show epistemic variability across individuals.

The Dialogic Mind

Many scholars would argue that this is a normal state of human mind—always wondering-wandering in different directions, at times opposite, while making meaning of a situation. The more complex is the situation, the process, or the phenomenon that the mind is trying to make meaning of, the more there is a likelihood for a rather complex trajectory that the 'probing' cognitive moves would follow. Thinking this way, we can assume that an intense and unpredictable exchange between the teacher and the students

in the movie can trigger cognitive resources in our respondents, which foster their reliance on a wider range of epistemological positions within a short period of time. Almost synchronously, these epistemological positions can alternate in the individual's mind, as if dialoguing with each other in an attempt to make sense of the observed. This dialogue-image resonates to me with the relativist ontology of the 'chosen' knowing. Reason & Rowan (1981) talk about dialectical thinking, viewing reality "as a process, always emerging through a self-contradictory development, always becoming": "knowing this reality is neither subjective nor objective, it is both wholly independent of me and wholly dependent on me." (p. 241)

We can think of a *'dialogic'* epistemological position as a particular category of thought, or epistemic style, which might be activated by a complex stimulus. That way, educators gain some additional food for thought as to which contextual adjustments in the instructional environment would be particularly potent in terms of triggering this kind of an epistemic style—the one more conducive to processing of complexity. The cues received from the students' reflective essays, for instance, can lead to decisions which kind of a movie, or a scene, or a creatively designed 'collage' of edited excerpts can offer an intellectually more intensive task, thus forcing the students' more sophisticated epistemological dispositions to engage in the process of meaning making. At the same time, researchers can gain a convenient, indirect tool for watching the internal 'dialogues' in the participants' epistemological positions with the possibility to reveal which contexts and which kinds of stimuli are particularly influential in triggering those 'dialogues.'

So far, my speculations about 'internal dialogues' attempted to explain a situation, in which a binary category appears to be a candidate for describing epistemological

orientation at its both poles simultaneously. As promising the explanation of such a 'both-poles-simultaneously'-phenomenon by the individual's 'internal dialogues' might seem, I have to admit that this situation can be explained simply by the fact that the respondent does not possess the adequate verbal repertoire for articulating his or her position. The range of the young adult's intellectual affordancies—vocabulary, the repertoire of ideas drawn from a variety of disciplines, as well as the experience in bridging and applying, in a combinatory manner, of the categories that belong to different fields of knowledge—might not be in place yet as they would at a more mature stage of development. In other words, the same situation might, perhaps, be explained by the reliance of the individual on his/her epistemological resources that are rather simplistic and do not imply a kind of an internal dialogue mentioned above in the pursuit of meaning making.

Finally, the same situation might be a manifestation of the proposition that cognitive psychologists advanced decades ago: Human mind consists of competing systems, including, we would have to add, the systems of epistemological dispositions. If William Empson was to agree to use the binary categories revealed by this study as descriptions of competing epistemological dispositions, he would probably say that each of the opposite (competing) poles of the binary category, or, better, their approximations, include the other among its possibilities.[43] Those systems, contemporary cognitive psychologists argue, can mutate and recombine across the contexts and over the lifetime. To get a sharper account of these competing epistemological systems, we need to follow the participants across various contexts and over some time. But this will be an agenda

[43] I am playing with Empson's (1947) statement related to the apprehension of poetry that he illustrates with syntax changes in Crashaw's versions of one and the same poem, 1646 and 1652 (p. 241).

for another, more elaborated study. The paradox of the observed methodological issue—the 'epistemological uncommitment'—presents an ontological challenge and definitely offers an interesting topic for discussion among researchers—cognitive, developmental, and evolutionary psychologists.

Conclusion

In this chapter, I have examined the process through which I attempted to make sense of the findings, as well as methodological challenges that I encountered during the analysis of the students' essays. I am not suggesting that my interpretation of both the findings and the challenges is the only possible one. I also do not feel that the amount of data I had enabled me to clearly determine the distinctions that the students made between knowledge and beliefs. I gained insights more related to the *kinds* of epistemological orientations that we might find when using the projective technique, than enabling me to make final judgments about epistemic positions of the individual students. With these caveats, I proceeded with this discussion offering my current thinking, which continues to evolve.

The framework for describing dimensions of personal epistemology, as suggested by the analysis of the student written responses, has nine categories of epistemological resources (Table 4), assuming the possibility of the polar differences among characteristics within the same category. These dimensions were thus described with the help of bipolar categories. I admit that some of the binary categories identified by the analysis might seem to the reader as not being concerned with the same construct or not define boundaries in quite the same manner. I consider these categories, however, to be

helpful in describing epistemological dispositions and useful at this stage of theory building. These categories are particularly helpful in providing conceptual links between personal stance about knowledge and knowing and other constructs such as stance about learning, teaching, and impetus for learning. It is my hope that a detailed discussion of attributing particular categories to certain dimensions of personal epistemology in the previous chapters will stimulate some discussion about how these constructs, still often viewed as separate and independent of epistemology, are cognitively represented by the individual.

The analysis of the findings revealed conditions necessary for ascribing a particular epistemological orientation—attributing a pole, or its approximation, of a particular binary category—to a written text created in response to a projective device. Such conditions imply corroboration between evidence stemming from the following:

- respondent's selectivity patterns—the selected scenes, behaviors, and activities in the movie, as well as references that originate outside of the text of the movie: such as the theories of educational psychology introduced in class;

- linguistic characteristics of the written response (use of textual markers as lenses for analysis);

- emphasis placed on a particular reference—a character's behavior or role, for instance—with regard to some kind of an external marker that might restrict reflection to a pre-determined content (paying attention, for instance, to the respondent's emphasis on the active role of a teacher, if a respondent replies directly to a teacher-role related question, would such question be provided on the administrated test).

There are several steps I would do to revise methodology to help with the attribution issue. Now that I identified a set of categories that seem to offer a reasonable description of students' personal epistemologies, I will have to provide for evidence that inter-rater reliability holds for other students. Specifically, the evidence for whether other students' responses, in a bigger sample, can be described by these same categories and, if so, how many. In other words, how often do epistemological stances that can be described with the help of the suggested categories appear in the data set. Another way to account for validity of descriptive schema is to compare among classroom episodes (for the same sample of students, for example, within the same course) in which common sense-making is warranted and can adequately be described by the suggested descriptive schema.

I will also have to refine the definitions for the binary categories from the perspective of personal epistemologies as a system of dispositions.

To help deal with the production component—the linguistic habits that may potentially produce a deluding effect on the attribution of the epistemological orientation—would require the examination of the students' written responses developed in various contexts. Such an expanded contextual ground for analysis would imply alterations in combining various domain-specific *instructional contents* with varying *kinds of stimuli* used as projective devices for the same sample of respondents.

The refinement of the concept of projective device in the future study can also help deal with an effect of the production component of a written response. The emergent properties of the projective device identified other analytical lenses that can serve as

independent projective devices, in addition to the major visual stimulus chosen (the movie). These additional filtering, projective functions originated *within* the 'film-interview' and, as it was illustrated earlier, can also be performed by some of the scenes in the movie, as well as by the theoretical concepts introduced in the course. Such 'Rorschach-within-Rorschach' tests make the process of eliciting the respondents' epistemological orientations more fine-tuned to the context within which the measure is taken. And visa versa, a complex stimulus can exhibit a potential of triggering certain kinds of the respondents' epistemological dispositions, which, in turn, become more capable of discriminating among the finer projective mini-devises within the same task.

In the previous chapters, we saw the differences revealed in the individual epistemological orientations. This variability may suggest that the same stimulus may trigger varying epistemological dispositions or, perhaps, the same ones, but to a different degree of involvement. Following the same participants of the study across various contexts and over some time, as well as alternating the kinds of stimuli used as projective devises, will allow for refining a landscape of individual epistemological dispositions that get triggered the most. More so, by letting the respondents find their own themes in the ambiguous text, and then letting them find their own genre and vocabulary to express what those themes are, researchers gain the opportunity to reveal wider perceptual horizons of their respondents.

The opportunity for respondents to author the form and content of their interpretive processes makes this approach to eliciting and evaluating personal epistemologies closer to approaches used in the humanities. Importantly, it is this freedom of the students' choice in approaching their response that also allowed for

variability in responses sought to serve the purpose of this study, hence provide for validity of the findings.

CONCLUSION

Implications

The line of inquiry adopted by this study illuminates the methodological issues of measuring personal epistemologies, thus contributing to the recently heated debate around such measures. As important as these methodological issues are, perhaps even more timely is the need to reconsider the very philosophical stance from which research on epistemologies is most often launched. Specifically, this study draws attention to (1) the ontological form of the construct of 'personal epistemology' as well as (2) the epistemological position of researchers who investigate individual's personal epistemologies. Below are some of the theoretical and methodological insights that this study suggests.

Theoretical and Methodological Insights Gained

1. *Philosophy of research*

First, this study differs from the majority of studies in epistemology, both large-scale questionnaire studies that emphasize quantitative methodologies and look for central tendencies and trends, as well as clinical interviews where the instruments incorporate a very explicit language. Unlike the approaches in these studies, this dissertation tested a less confrontive, naturalistic method characterized by three important features: (1) it implied a concern different in nature from the one implied by the majority of the present studies, (2) elicited responses indirectly, (3) and analyzed them on a case-by-case basis.

The first characteristic means that the evaluation of personal epistemologies in this study is concerned with "*What exists?*" or, to put it differently, what types of personal epistemologies can be revealed in the context of the given task and the given sample. This concern is different from the concerns of the studies that use a list of items on a questionnaire / interview. In my observation of the current literature, the structure of the items listed in a survey form suggests a researcher's intent to elicit "*What do we know* (about the match of the participants' perspectives on knowledge and knowing to the range of items on the survey)?" The participants' responses are anticipated to a range of items, pre-determined by the researcher before the instrument is applied. Questions like this imply a concern that is epistemological in nature (in comparison to *"What exists?"*— a question implying rather an ontological concern). They limit the findings by imposing on the data an epistemological position that shapes the conceptual framework and the measurement instrument of the study. The approach described in this dissertation offers a broader, less epistemologically limiting lens for conceptualizing both the procedure for eliciting and the descriptive schema for evaluating personal epistemologies.

The responses were elicited without asking the students directly about their own perceptions of knowledge, learning, and knowing. A case-by-case analysis of these responses seemed quite reasonable as a first test of the projective technique. It allowed me to focus on the individual students' responses, and to pay more attention to the variability of the characteristics of their personal epistemologies. The case study format within a small sample gave me the opportunity to conduct a very detailed analysis of the data that provided a depth of information about a small number of respondents. Involving a larger number of participants at this first stage of exploring a new approach might have

hindered the development of my understanding of the essential qualities of what I infer as the students' epistemological orientations. Sensitivity to the details in this study is critical in revealing the essential benefits and threats of the new projective technique tested. Not the least of such benefits is the opportunity to advance our understanding of the ontological nature (or ontological form) of the construct of personal epistemology, thus clarifying our own epistemological position, as researchers.

Besides clarifying the general philosophical stance with regard to the process of inquiry, it is important to apply a philosophical analysis to the deep methodological issues in order to productively critique the current empirical work. During the analysis in this study, I have made excursions into the province of philosophy on multiple occasions trying to identify the meanings of the semantic relationships encapsulated in my students' responses. The philosophical investigations have helped me explain some of the emergent elements of the categorical schema.

Given that fact that philosophical matters in educational research have a highly "contested status" (Burbules, 2002, p.3), the philosophical examinations of this kind will make an especially useful contribution to clarifying philosophical positions underpinning both the conceptual frameworks and the methodological issues of empirical studies.

2. Focus of research interest

The interpretive process involved within the analysis in this study suggested the shift of the very focus of research on personal epistemologies from the ways in which students' views differ from those educators wish them to develop, to understanding the

cognitive resources the students possess. As a result of multiple iterations of my readings and interpretations of each and every essay in this study, I became more convinced of the idea of personal epistemology as resources. From the perspective of philosophy of research, this means focusing on an examination of *inquiry*, the practice of *processing* contents and environments with which one's mind engages to make sense of the world, and which certain epistemological resources enable. This approach is different than that of large-scale quantitative assessments that aim to measure traits or beliefs that a person does or does not have as if they were context and content free. It is this difference that is revealed by the gap between the students' inquiry abilities, and their epistemological 'achievement' scores (as defined by a survey). Focusing on the processing part will allow for better understanding of the ontological form of the construct.

To justify this philosophical position, as well as define the criteria to gain a more precise account of the individual's epistemology as a system of dispositions, we need to follow the participants across various contexts over a period of time. From this perspective, a more elaborate research agenda should look for conceptual cues that activate the individuals' epistemological dispositions in various contexts and contribute to the individuals' making of meaning from the experience (experiential knowing), as well as their integration of knowledge. Challenged by such a research agenda, we should anticipate that reliability problems will be a major challenge.

3. *Indirect eliciting of personal epistemologies.*

The study addressed the issue of the individuals' self-representation by testing an approach to elicit and evaluate personal epistemologies indirectly. This issue appears to

be a concern in all studies that approach people with straightforward questions about their beliefs related to knowledge and knowing.

4. *Context-sensitivity*

The forth contribution of this study is in its context-sensitivity: It is completed within the context in which the students' personal epistemologies are applied. The projective technique elicited responses in a format of a 'film-interview,' of which respondents were not aware. While addressing the students' stance on knowledge and knowing as it relates to teaching profession, such an 'interview' was conducted within the context closest to the topic of researcher's interest, the introductory course in Educational Psychology for pre-service teachers. Thus one of the major concerns in recent criticisms of the current approaches to research on epistemologies, specifically that of neglecting the contextual influences on the participants' responses, has been addressed.

The sensitivity of response analysis to the shifts in the respondent's focus of reflection, as well as to the contextual nuances, enables two important methodological advancements:

(1) Improvement of validity—by avoiding attribution error due to overseeing contextual influences, and

(2) Clarifying the philosophical stance on the construct of personal epistemology—by supporting the perspective on personal epistemologies as a system of cognitive dispositions.

5. Conceptualization of the construct of personal epistemology

Finally, the study provides some useful methodological hints for dealing with an *'overintellectualized'* (Reason, 1998, 282) approach to conceptualizing the construct, particularly, its dimension 'the nature of knowing.' Such hints include:

(a) The benefit of providing participants with an ill-structured target for reflection. Providing open-stated questions, or none at all, to the movie selected as a projective device, in relation to the 'good' teaching or 'effective' learning, for example, would enable a less structured, or unstructured, system of identifiers that could possibly mark for the participants the targeted theme of their response (such as nature of learning, or nature of knowing).

(b) The benefit of allowing for the respondent's authorship of the form, content, and representational genre of his or her reasoning process, as well as the production of the response. That is, in the case of using the movie as visual stimulus, let the respondent choose what references from the movie to use, toward what purpose, and what vocabulary and style would best articulate the meaning that he or she has made of the movie.

(c) The authorship of the form and content of response and the ambiguous target of reflection, together, enable a less formal and more emotional and configural, thus metaphoric, representation of thinking. This implies the involvement of intuitive, 'non-articulated' reasoning, hence, a broader range of the 'activated' epistemological dispositions.

I am not suggesting that a case study like this is sufficient for defining the nature of personal epistemologies. I contend, rather, that such a naturalistic case study will augment the general findings that researchers may gain in a large-scale study by adding variability of contextual nuances and by attending to finer, and possibly more tacit, individual epistemological dispositions through an indirect measure. Combined with the shifting in ontology of the construct from unitary beliefs to the unity of dispositions (or resources), the study might be helpful in pushing the boundaries of research methodologies in important ways.

Methodological Issues to be Addressed in the Future Research

This study suggests a number of possibilities for future research.

1. Reproducibility of the study

The question to raise is whether the individual essays would fail 'to load' in a future study on the bipolar categories defined in the study presented. I would like to emphasize, again, that this study is the first trial of the approach described, and I do not contend that the categories are my final judgments or guarantee the substantive validity of the emerged descriptive schema. The results of analysis, however, afford conceptualizations of the construct in favor of personal epistemology as resources, which is sufficient evidence for the validity of the line of inquiry itself. The issue of 'loading' of the categories in the descriptive schema suggested here becomes then an issue of refining both the contents and the definitions of the categories for the technique tested here to be reproducible by other researchers. Such refinement is possible in a more elaborate

research design at its next stage that would account for variations of stimuli, contexts for reflection, and the individuals' characteristics.

2. Refining the categorical schema in a diverse sample

Complete a study on a *diverse* convenience sample, which would include both young adults, the students of different grade levels, academic majors, and college experience, and more mature adults, such as faculty and staff members from across disciplines, educational background, and age. Members of the wider community can also be a part of this sample. This sampling option will benefit by diversifying individual cognitive differences, thus providing the ground for re-fining the categorical schema of analysis.

The outcomes of such a study may be seen as possible explanations for some differences in the tendency to think about the nature of knowing and learning as suggestive about the individuals' epistemological dispositions within the disciplinary-bound contexts. Combined with the data of some potential developments over time, this revised version of the study can offer useful accounts of productive resources for the construction by the individuals of more sophisticated understandings and knowledge integration.

3. Illuminating the issues of discipline-specific contexts

It seems reasonable to repeat the approach I tested in this study within various disciplinary contexts in an effort to identify whether the responses vary. Specifically, I envision the following research project. The same visual stimuli—a commercial movie, a

photo-collage, or a piece of art—will be shown in a variety of departments offering courses in various disciplines—such as, for example, English, Theoretical Physics, Mechanical Engineering, Music (instrumental), Visual Arts, Early Childhood Development, Economics, Dance, Law, Public Relations, and Journalism. A written response, such as a piece of a free-style writing, will be requested from the participant as if it were a regular classroom assignment. The selection of the subjects can be done through a convenient sampling within the separate cohorts of enrollment by academic major of the offering department. Sampling should control for similar college experience, that is, the number of years in the college, as well as for experience in the area of academic major (the latter as cumulative in both high school and college years).

Administer the test within the same variety of disciplinary contexts for different grade levels: Show two independently constructed visual stimuli that imply equal ambiguity of the interpretive task to the same participants 1-2 years.

The tasks asked of the participants can be of different degrees of 'looseness'. *Task option 1:* Students can be asked to respond in writing to a broadly stated question. For example:

> "From observing the characters in the movie, what can you say about learning? Does learning happen? If so, what kind? Under which circumstances? Who is the learner? What gets learned? How does learning happen? If you think no learning takes place in the movie, please explain your conclusion. In either case, be as detailed in your response as possible by using specific scenes, behaviors, and character features observed in the movie. Take as much time and write as long as you need. Choose your own style and genre of writing, which describes best your impressions with the movie."

Task Option 2: The task can be defined even more loosely by asking the following question:

> "Please describe your impressions with this movie: *What* do you think happens here? *Why* do you think these ... (events, situations, conversations, processes, outcomes, etc.—you define) happen the way they do?"

4. Pursue a cross-disciplinary approach to conceptualization of the construct

The findings of this study allow us to suggest that a *cross-disciplinary* approach to conceptualizing the construct of personal epistemology is needed. Thus, cognitive psychology, allows us to take into account the sources and certainty of knowing (King, 2002, AERA panel). Developmental psychology, by looking at stages of human development, and attend to the temporal changes of the construct properties (Perry). Physicists can bring an environmental perspective on the construct. Hammer (1994), for instance, offered a model of epistemological resources, where the human internal ecology—the system of resources built by human psyche, mind and body—shapes one's personal epistemology.

What I stated above is my current, and evolving, understanding of the way in which further research on personal epistemologies might move. In light of this understanding, the question I stated in Chapter 1 as to whether researchers need a common construct of personal epistemology defined in common terms appears to have a positive answer. While publishing in different journals and talking to different audiences, there seems to be an increasing effort on the part of scholars from the various disciplinary fields to approach the studies on personal epistemologies as a single field of inquiry. In order to be shared, the results from around the disciplines and methodological approaches require some kind of a working symbiosis. Therefore, further clarifying the philosophical

position, combined with the theoretical, rhetorical, and empirical work toward such symbiosis appears, indeed, a good idea.

Implications for Educational Practice

Visual subject, multiple texts, and visible epistemologies.

The use in college teaching of a visual subject other than the printed text seems to be a promising tool for instructional design. First, it enhances the learners' visual culture, contributing to the development of sophisticated personal epistemologies. Second, with its help, supported by the integrative affordances of hyper-media and interdisciplinary approaches, college teachers can be better equipped for flexible curriculum adjustments with respect to their current student bodies, in-sitú, as their courses unfold. The gained knowledge of the students' personal epistemologies can provide a helpful interpretive lens for teachers to use in understanding their students' ideas, abilities and needs. Awareness of the students' epistemologies might substantially inform both the instructional decisions and the interaction between participants of the learning process.

An important issue is, therefore, the visibility of various aspects of personal epistemologies to both teachers and learners, as it thus lays a ground for epistemological development. Such visibility can be achieved through engaging learners within a rich learning environment and introducing them to a variety of texts—written, oral, visual, kinesthetic, and virtual. A combination of printed texts, oral narratives, visual and kinesthetic images appears to be critical for freeing up the space in which the imaginative and intuitive ways of knowing come into play. What the interaction with multiple texts

seems to provide for is a balance between the intellectual and the intuitive parts of cognition. It is this balance that allows for connectedness among the ideas, for a holistic grasp of the matter—whether it relates to the Self, the disciplinary concept, or the worldview.

Why does the distinction 'beliefs' versus 'resources' matter?

Such a distinction enables the shift in instructional intentions. While opening a new category for instructional perception of students' learning, the current perspectives on personal epistemology require more attention to such details of each perspective as its form, or *ontology*. Without sensitivity in the research to this detail, the actual informing of the teaching practice remains ill-informed, whether the instructional decisions are moment-to-moment, long-term, disciplinary-specific, or general.

The conceptualization of personal epistemologies as cognitive resources (or dispositions), rather than 'beliefs' or 'theories', shifts the task for a teacher. Instead of eliciting the 'inadequate' *beliefs*, the teacher focuses on the appropriate *contexts*. In other words, rather than confronting and replacing the students' beliefs, such as that 'knowledge is simple' and 'absorbed from authority,' with those more 'productive' ones that incorporate complexity of knowledge and knowing[44], the teacher focuses on creating contexts, which activate the students' epistemological dispositions conducive to processing complexity. Different kinds of epistemological dispositions enhance different epistemological behaviors—organizing and manipulating perceptions of context-specific

[44] Such a replacement of beliefs appears to be the dominating task built into most of the assessment instruments presently in place.

knowledge, while acting within such (discipline) specific context.[45] From this perspective, confirmatory evidence regarding which types of instructional contexts can trigger which kinds of epistemological dispositions is of critical importance to teaching practitioners. Such evidence provides teachers with contextual cues for fostering knowledge as *created* (the students make sense for themselves), instead of knowledge *propagated* ("Teacher told us..."). Notwithstanding, the popularity of the constructivist approaches to teaching within the last couple of decades indicates that resource-based implicit beliefs of teaching are probably inherent (though not necessarily explicit) in much teaching practice.

There are many questions to be answered in order for teachers to effectively use the results of the research on personal epistemologies. What is the mechanism behind the triggering of the different epistemological dispositions in various contexts? Or more precisely, what contextual factors and contextual differences can trigger different epistemological dispositions? How do these various epistemological dispositions affect content learning in discipline-specific contexts? How to help students 'activate' their epistemological dispositions that are more reliable in discipline-specific contexts? Answering these questions depends on sensitivity to the details of this perspective. The study conducted within this dissertation represents a step in heightening this sensitivity by, 1) widening the range of epistemological dispositions elicited, and 2) attending to the affective and intuitive dimensions of personal epistemologies.

[45] I use the word context in a broad sense, which incorporates both academic divisions of scholarships as well as non-academic, real-life contexts. The teacher's job is to enhance critical life skills and general skills of knowledge acquisition along with fostering the acquisition of the academic, discipline-specific knowledge.

Information about the students' personal epistemologies, as well as the ways, in which the nature of instruction might foster students' imagination, is important in the practice of teacher preparation. It is our prospective teachers' worldviews and perspectives on the nature of knowledge, knowing, and learning, which, through their own practices, shape the worldviews of the future members of our society.

Form of the teacher professional development.

Many would agree that significant differences in teacher work habits—such as thinking about general goals of education and the specific curricula decisions, interaction among teachers and students as well as among teachers themselves—can be attributable to differences in the teachers' epistemological assumptions. It seems appropriate, therefore, to suggest that the practice in attending to multiple epistemologies—those of students as well as the teachers themselves—can also be a form of teacher professional development. Revealing different stances on what knowledge counts most, how that knowledge is acquired, and what would be the 'best' relevant way to evaluate the process of its acquisition might facilitate clearer focus in school and university policies. Such a form of professional development can help deal with the "inquiry paradigm wars" (Gage, 1989), while fostering the acquisition of multiple epistemological repertoires.

The downside of the approach tested in this study is in the complexity of the interpretive process, and the amount of time it might require. The suggested technique might therefore be less useful for immediate use by the classroom teachers, but could prove useful, with some refinements of the categorical schema, by school professional

development workers, district analysts, and researchers (since the use of the technique would require special training and time). The conclusions drawn by these professionals could, in turn, guide the teachers in their instructional decisions.

POSTSCEPTICAL INSIGHTS

The Mirror of My Images

Gaining momentum, I would like now to share some additional thoughts about how the iterative analysis of the reflective essays led me at times to the competing conclusions and why re-thinking of the ontological form of the construct of personal epistemology might be useful. Many of the ideas that follow remain to be investigated as possibilities in future studies. However, I felt compelling to share these thoughts as they directly relate to and stem from my effort of conceptualization the methodological approach that this study pursued. Some of these additional thoughts can be further illustrated by one more reflection—on the potency of the learner-created multiple interpretive texts as vehicles for promoting the externalization of the learners' personal epistemologies (Appendix A, Reflection: 'Performative Essays').[46]

On the Ontological Form of Personal Epistemology

One of the competing conclusions in the analysis of the students' essays had to do with the attribution of the epistemological orientation to opposite poles of the same binary category or a 'hybrid'-type of characteristic. The subsequent theoretical speculations about these conclusions led me to re-think my understanding of the ontological form of personal epistemology. My thinking was also supported by some of

[46] I placed 'Perfromative Essays' in the attachment rather than in the body of this manuscript, because this reflection relates to the student work that was not included in the analysis within the scope of this study. I was compelled, however, to use this work for illustrating some important conclusions and speculative thoughts that the analysis has led me to.

the literature in which researchers (DiSessa, 1993; Hammer & Elby, 2002; Minsky, 1986) express the idea that the ontology of 'personality traits' will not suffice because of its simplicity. Encouraged, I went on visualizing a model that represents my current thinking about this construct.

As I currently conceive it, personal epistemology can be described by the model of *epistemological dispositions*—a system of the individual's cognitive resources with the properties of a *field* rather than that of compartments, or unitary traits, or beliefs. Thinking about personal epistemology as a field, we can explain, to some degree, its context dependency and the notion of expertise. The multiple dimensions of epistemological dispositions, including their opposite manifest characteristics, such as 'open' and 'close' within the dimension of 'determinism/non-determinism,' are present in the individual's cognition simultaneously. Certain epistemological dispositions engage in reflective processes within certain contexts that 'cue' particular dimensions of epistemology and their 'polarities', or approximations of those. In other words, the activation of various dimensions of personal epistemology, as well as the application of these dimensions' corresponding polarities, is context-dependent. Various stimuli embedded within certain contexts cause a perturbation of the individual's target of reflection—its variation in the current orbit resulting from an influence of an external 'body,' the stimulus. Such perspective on the ontology of personal epistemologies has an advantage over the ontology of 'beliefs' or 'traits' in that it provides theoretical structure to account for context-dependency of the respondents' reasoning: various epistemological dimensions are more or less likely to be 'activated' and applied in various contexts.

This does not mean, however, that the various dimensions of personal epistemology can operate separately from others, or that one pole of the dimension completely inhibits the other. "One may remember what Pavlov found in the brains of his dogs"—writes William Empson (1966) illustrating his notion of unity in apprehending text—"that stimulation of a particular region produced inhibition, almost immediately, over regions in the neighborhood, and at the region itself a moment later" (p. 238). This is to suggest that the manifestation of any one of the epistemological dispositions, or a combination of them, still allows others to be present, simultaneously, and to become available under certain conditions.

On the journey from a novice to an expert, the individual's epistemological dispositions rehearse multiple 'activation' or conditioning situations, thus training the mechanism for shifting the target of reflection so that such shifting occurs more flexibly. This notion of conditioning the epistemological dispositions echoes the notion of activation of the "*p*-prims"-model[47] suggested by DiSessa (1993) and advanced by Hammer and Elby (2002): "Development toward expert understanding involves modifying which p-prisms get activated in which situations, rather than replacing p-prims with other structures" (p. 176).

The multitude and continuity of such rehearsals, within which an individual deals with the differing systems of categories adopted by various disciplines of scholarship and used in various arenas of human life, enhances the unity of the involved epistemological dispositions. The various dimensions of personal epistemology merge once they are

triggered by a complex stimulus, thus enabling the individual to deal with complex modes of knowledge. A particular mode of activation of the epistemological dispositions reminds me of Turner's (1986) 'liminal' space, specifically, the one associated with relationships occurring simultaneously between the various dimensions of epistemology, as well as polarities within the same dimension. Within the 'liminal' space, the target of the individual's reflection interpenetrates the territories of the activated epistemic dimensions and their polarities groping for connecting "intuitive purposes, intellectual strategies, behavioral expression, and the outside world" (Reason[48], 1998, p. 280). This image helps me visualize the flexibility by which an expert combines multiple frames of references and experiences when dealing with complex tasks. To put it into Arnheim's terms, such an epistemological mode can provide for the balance between the intellectual and intuitive parts of cognition, which allows a surgeon, for instance, to make quick decisions in the most sophisticated cases of a cardiovascular operation.

Viewing personal epistemology as a system of dispositions—which stands in my mind as a spherical image of a universe—requires me to revise the definitions for its dimensions (descriptive categories) derived earlier. Thus, the 'continuum' for a binary category, for example, can probably be better described as a 'band' of possible positions for the construct value. It may well be that, talking in terms of a 'band-width,' we are dealing then with the matter of technical precision. The epistemological disposition characterized by the presumption of *'learning is simple,'* for instance, gets triggered in

[47] DiSessa has proposed a model of "phenomenological primitives", or "*p*-prims" as the parts to assemble into a model of intuitive physics (in Hammer & Elby, 2002, p. 175). This construct was mapped onto personal epistemology from the conceptual change literature.
[48] Reason uses this language for explaining the epistemology of action inquiry.

reaction to a more structured environment or content of the intellectual task. Examples of such a well-structured task would be: a simple arithmetic operation (A+A=2A); understanding the shape of the Earth as round; basic transitions of steps in a contra-dance, or understanding the major function of the heart pumping the blood. The epistemological resource responsible for viewing learning as rather 'complex' would be activated, on the contrary, in reaction to loosely structured tasks and environments (all novel tasks and environments would be of this kind). Compare the above examples to the technical precision of the following tasks: application of the limit theorem to the spending decisions of a large corporate unit; understanding the probabilistic behavior of a wave, which can be at the same time described by the corpuscular properties of a discrete particle; or relating to the daring group aerials performed by the Eliot Feld's Ballet Tech. Take the task of understanding how the human mind works, after all. In contexts like these, an individual deals with multiple degrees of technical precision simultaneously, which demand of certain epistemological dispositions, perhaps, their combinations, to come into play.

The above considerations have implications for both the philosophy and methodology of educational research. Using these considerations, I would like to offer a summative, hypothetical proposition from the perspectives of both theoretical and empirical work to outline a broader research agenda.

Theoretical and Empirical Work on the Nature of Representation of Personal Epistemology: A Broader Research Agenda

My attempt to theorize on the nature of the representation of personal epistemologies seems to be timely in that it meets the demands of the emergent research agenda of the investigators into personal epistemologies. Pintrich (2002) points to the need for such theoretical work, and suggests that the representation of personal epistemologies as 'resources' can lead to new applications of the recent cognitive psychological models—specifically, connectionist models: "different types of resources may be connected in some type of node-network model" (p. 393). Such a node-network model can connect 'cognitions,' or 'schemas,' or 'fields' related to knowledge, learning, and intelligence through the nodes of one organistic network, thus dealing, at the theoretical level, with the competing claims regarding either separateness or intimate bonds between these cognitive structures.

The connectionist or network model of personal epistemologies echoes similar propositions in the theories of writing (Flower & Hayes, 1984; Sadoski & Paivio, 2001), language development (Vygotsky, 1962, 1978), and human activity (A. Leontiev, 1978; Engeström, 1999). In their theory of written composition, Flower & Hayes (1984) conceptualize the nature of the writing process as a semantic network of internal memory representations and processing operations, which are either nonverbal (i.e. imagery, affect) or verbal (such as a self-instruction, for instance, "Must write a sentence here."). Sadoski & Paivio (2001) further elaborate on the semantic network model, proposing that the incorporated in it cognitive processes "can be interactive rather than linear" and "can be called up at any time and embedded within another process or within another instance

of itself" (p. 143). From this perspective, a rhetorical problem for a written composition is posed internally, by the changing "goals discovered by the writer through insights triggered by the act of writing" (same, p. 143). The mental references or associations evoke, in turn, related language (verbal representation) and images (non-verbal, affective representation).

We find a very close picture in Vygotsky's description of the cognitive processes involved in the development of inner speech. He describes this process as a network of non-linear, recursive processes of memory representations, associations, and processing acts, interacting to produce a semantic meaning before it can be articulated; and, once the meaning is articulated (i.e., put to concrete words), returning into the domain of images. If I combine some of the language used in this dissertation with that of Vygotskian theory, I might describe the process of interpretive writing in the following way. Each act of articulation, while moving the target of reflection into the 'public space,' (where thoughts are translated into the language of the 'persona of the audience'), triggers a new act of imagination, shifting the individual's target of reflection into the 'private space' of the 'persona of the writer'[49] (where meaning making is approached through nonverbal cognitive structures, images). A new act of imagination, in turn, induces the following act of articulation as the image initiates and shapes self-instructions for further writing. The triggering effects of both articulation and imagination can take place simultaneously, merging the private and the public spaces, as well as the individual and the social dimensions of the meaning making process.

[49] The terms '*persona of the writer*' and '*persona of the audience*' are introduced by Sadoski and Paivio (2001) in their Dual Coding Theory of reading and writing.

The third theoretical field I referred to—activity theory—originated within the Russian school of psychology in 1930s-50s (especially in Alexey Leontiev's account of the relation between activity and consciousness). A.N. Leontiev's (1978) emphasis on the issues of the emerging consciousness and mind as a phenomenon of life has been advanced internationally, shifting toward the problems of psychology of personality, and, lately, to a multifaceted theory offering an interdisciplinary analytical scheme. This framework also portrays the nature of the meaning making process as a network of distinct cognitive processes that interact with each other recursively, imply lateral links, and can be embedded within each other (Cole et al, 1997; Engeström et al., 1998, 1999).

We can probably describe the process of creating a written response to a projective device with the help of any one of these models. If we could create a theoretical account of composing a response that explains the process of meaning making in relation to personal epistemology, then we would propel our understanding toward a more organistic view of the nature of personal epistemology. What all of these models share is the acknowledgement of *imagery* as a vehicle for meaning making. The broader research agenda at the empirical level is then to find ways to account for the indicants of such nonverbal-imagery, the affective contributions to meaning making as suggestive of certain epistemological orientations. Combined with the empirical accounts for verbal (articulated) contributions, the imagery (non-articulated) indicants would provide for a deeper understanding of the nature and contents of personal epistemology. Particularly, they would help deal with the sequential processing constraints of the verbal (articulated) system. In addition, a field/network model would escape the theoretical limitations of a trait-oriented model of personal epistemologies by being more sensitive to the contextual

factors (such as the language use and semantic patterns in the context of creating a response). At the same time, this model also includes a consideration of the 'internal,' imaginative, cognitive processes. It thus has the potential to enable a better understanding of the mechanisms that drive epistemological development.

At the empirical level, it seems reasonable to investigate the possibilities of applying a model analogous to the network analysis model (such as developed by Ken Frank in relation to social networks[50]) to provide for an empirically testable account of the process by which responses are composed. Specifically, the mathematical apparatus of such a model could account for the various characteristics of the subjects' responses, which might be suggestive of certain dimensions of personal epistemology. We might keep the interview 'invisible' (that is, the respondents remain unaware of being 'interviewed' about their perceptions of knowledge and knowing), and encourage responses in a manner as informal as possible. We might extend, however, the range of the potential targets of responses for our subjects by using two or three different projective devices with the same sample. Or we may choose to diversify the forms in which we ask our participants to create their responses by asking them to visualize, for example, and then talk about the 'visualized' response, in addition to writing about the same stimulus. Working with the same sample further, and controlling for both the form of the subjects' interpretive expression and the kind of the projective device used, we can also vary disciplinary contexts within which each measure is taken. This way we may be able to map out the distribution fields of the dimensions involved—knowledge schemata, images (nonverbal imagery), and auditory images of words and phrases, by which

response is composed. By using these distribution fields as the context for our analysis, we may gain some ideas of the intensity with which a particular dimension gets involved, the degree of probability adequate to activate certain epistemic dimensions, and the 'overlapping,' the connections between various dimensions of personal epistemology. A good match for such complex investigation might be an interdisciplinary program (the Center for Interdisciplinary Studies in Science and Humanities at a university, for example).

The network-analysis-type empirical approach suggested above is in some ways close to the latest empirical efforts in research on personal epistemologies, particularly, a multitrait multimethod-MTMM (Pintrich, Wolters, & Baxter, 2000). It is similar in that it has individuals respond to an array of tasks, and then examines the correspondences of construct characteristics across different contexts of analysis: MTMM uses a variety of methods within one study. However, my proposal is different from MTMM in two important ways. First, it favors ill-structured tasks over questionnaires and direct interviews, as the latter impose a higher degree of structure and tend to orient a response more toward the 'persona of the audience.' An example of ill-structured tasks would be a series of informal responses to a projective device, or a series of projective devices, with a response being authored in various expressive modalities, shifting its contents toward 'persona of the writer' (creator). A second distinction is that MTMM attempts to separate out method variance while remaining intact in relation to ontology of the construct of personal epistemology, that is, the ontology is retained as of traits, unitary elements. As I argued earlier, the trait-view of the construct of personal epistemology has to do with a different philosophical position of the researcher as well as a different instructional intent

[50] See, for instance, Frank (1998) on the use of multilevel models in studying social networks.

of the practitioner. The trait-oriented philosophical position is limiting, in my view, as it is tending toward a more unitary conception of epistemological development as opposed to the field of networking cognitive resources (or dispositions), equally available but activated differently in various contexts. The trait-oriented instructional intent, on the other hand, is concerned with the substitution of the 'simplistic' traits with more developed ones as opposed to focusing on creating instructional (developmental) contexts that trigger epistemological dispositions that will be most effectively involved with handling a context-specific complex task.

Finally, exploring the field/network model in a longitudinal study (following the same participants across contexts and over an extended period of time) might illuminate ways in which different dimensions of personal epistemology are coordinated developmentally—a question not yet answered neither by the developmentalist nor contextualist models.

APPENDIX A

Reflection

'Performative Essays' or

What Can We Learn From the Student's Artistic Expression?

> *... as though a suitable special genre for woodwind voices*
> *in all their individuality had finally been found...*
> (Richard Miller)

In this reflection, I elaborate on one of the implications for educational practice suggested earlier. Specifically, I focus on the potential contribution of the student-created multiple texts as part of the instructional environments that can make personal epistemologies visible, as well as foster epistemological development. I refer to three examples of the students' work completed before and after their watching and interpreting the movie "Renaissance Man," and use these examples to illustrate a potential for an additional analytic lens that can help evaluate personal epistemologies.

Several weeks before the students wrote their reflective essays in response to the movie, they were asked to present their understanding of the concepts of knowledge and knowing visually in the form of a painting, a sculpture, or a model. The class setting became a studio where an exhibit of the students 'Map of Connections' was opened for everybody to view and reflect upon.

Anna has created a picture (Fig. 1) depicting a family of concentric monochromatic circles of various colors, which were opening into the 'universe.'

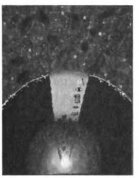

Fig. 1: Anna's "Map of Connections"

The circular form had 'to do with how I *think* and *feel inside*', explained the student (*Italics* added). The external circles—the parts—pushed apart traversing the edges of the universe—the whole. Talking about her pictorial representation, Anna mentioned the pleasure of not knowing the 'end' of her exploration, the almost *'poetic mystery'* of the search for *'truth'*, which is 'going to continue through life.'[1] The knowing never returns to its original 'core', as further experience and impressions erase the footprints of earlier ones behind her. At the same time, the family of circles implies the idea of repetition: The earlier understandings come back at different levels, modified in 'colors.' We see a visually represented idea of an endless 'coming to know', while we hear Anna saying that there is no 'final truth,' that the 'truth' is constantly evolving, as does the sense of Self. A discrete pattern representing a cyclical learning process,

[1] Excerpts are taken from the video that recorded students talking in class about their visual representations of learning, teaching, and knowledge.

combined with the infinite space and time in which learning takes place, is suggestive of the *organistic* epistemic orientation of this pictorial representation.

Over the semester, Anna had also revealed a strong preference for poetic texts. On various occasions, she would bring a poem to class. The first such occasion was a presentation of her 'own' language, or the 'best expressive means'. Anna referred to poetry as her special second language (or mode of expression). For the final presentation, when the students were asked to tell the class what they learned from the course, Anna brought her favorite poem. This last poem was to tell us what she loves and how she things she would bring this to her future students, as she becomes a teacher herself. The rich and complex poetic texts which Anna shared in class as her favorites, indicate her inclination to think and grasp the idea metaphorically, and of being capable of attending to the details, yet synthesizing the individual parts into a bigger picture—a whole. Her empathy toward poetic texts appears to be yet another indicator of both an *open* and *aesthetic* epistemic orientations.

Thus, Anna's visual representation of her thinking about learning reveals an organistic view on its nature, while her other presentations in class reveal also an emphasis on the importance for her of the aesthetic and affective in learning. Her choice of poetic language as the means to express her-self, her empathetic thinking of teaching as an activity of pursuing something she loves, and her value of learning as a life-long endeavor (a 'universe of learning experiences'), together, build a substantial support for describing her personal epistemology as open, aesthetic, and organistic.

At the exhibit of 'Maps of Connections', Eli presented his oil painting depicting a human profile against an abstractionist composition of color as his vision of learning, which, he believes, is enabled through multiple communicative channels.

Fig. 2: Eli's "Map of Connections"

Explaining the background color composition, Eli mentioned the *'felt'* knowing. What we see is an impressionistic use of brushstrokes, depicting an 'impression' of the concept of learning rather than a detailed 'table of contents.' The emphasis is on color rather than on line. These essential properties of this visual work lead me to think that Eli was not only trying to record his visual experience of paints and their combinations, but also to convey the sensations evoked as he thought —*felt*—about his concept of learning. Such an observation echoes the one that I made earlier regarding the *intuitive* epistemic orientation, revealed in Eli's written response to the "Renaissance Man.' We have to admit, of course, that the quality of Eli's visual representation might as much indicate the intuitive dimension of his personal epistemology as it points at the potency of the very act of visual representation itself. As much of the philosophical and educational literature suggests, the act of visual representation of an idea enhances the individual's use of

imagination. In other words, using the vocabulary of this study, this means that an act of design (or visualization) helps an individual to rely on his or her intuitive epistemic resources, which are otherwise left unrequested and unused.

In his talk about this 'Map of Connections', Eli also explained that the human head's contour manifested the locus of the individual's learning, while at the time of reading his essay on the 'Renaissance Man', I described its epistemic orientation as teacher-centered. Here is the illustration of how the juxtaposition of a written response with the visual representation of the student's thinking helps elicit additional evidence for evaluation of personal epistemology. Eli's visual representation, and his talk about it, allows us to clarify the locus of learning, as he perceives it, within the learner him/herself. Much of the focus on the teacher in the essay (that I have interpreted as teacher-centered), in combination with the locus of learning placed within the learner, is suggestive of the viewing of the teacher as learner. Such a focus reveals thinking of learning as a *complex* rather than simple process (due to various sources). I would not be able to use this descriptive category without having Eli's visual representation.

Sylvia wrote in her reflective essay on 'The Renaissance Man': 'Action is as important as awareness--it is not enough to do nothing.' For her final presentation to the class, this student created a dance. Being a better dancer than writer, she articulated her understanding of knowing with the help of her own language—movement. Sylvia not only demonstrated her understanding of the diversity of 'languages' which people use to express themselves, but also organized a short dancing workshop, taught the whole class several movements and transitions, organized peers in groups, and had them create their

own dance by interpreting the original movements. This student combined in her final performance, in a metaphorical way through the language of movement, her understanding of Self (her 'best language'); her relation to her peers; her understanding of her role as a prospective teacher, and, possibly, as an agent of change; and the social nature of learning. Within this dance, her personal epistemology appeared more complex than I was able to judge about it based only on her written response to the movie.

These three examples of the students' 'performative essays' illustrate how performative forms—visual, in particular—can be helpful to teachers as symbols of the values held by the students about learning and knowledge. They can be helpful to researchers as well by providing additional evidence toward the students' personal epistemologies, especially the intuitive, affective, and aesthetic dimensions left uncovered in the traditional surveys, questionnaires, and even open-ended interviews.

The examples described above helped me clarify the binary category 'Cold mind/Logical' versus 'Affective/Intuitive/Aesthetic'. A 'cold-mind'-type of an orientation implies a voluntary expression of his personality that is capable of paralyzing the subjective element of his work to a great extent by making collective symbolism his own. This type excels less therefore, in the creating of new forms than in perfecting them. In a learning setting, such an individual with such an epistemic orientation is likely to anticipate that the teacher will give the learning means to master so that he/she perfects those.

Along the continuum of this binary category, we would anticipate a shift from a student –receiver, who is anticipating a delivery of bites of certain discipline-specific information, to forming a creative personality. The latter begins by identification with the 'master-teacher' and is then 'artistically' developed and perfected on the student's own lines. 'In this sense the Greek was creative before he arrived at creating works of art, or, indeed, without ever shaping anything but himself and his pupil. Socrates is the best known of many examples of this' (Rank, 54).

Perhaps, if we can provide avenues for our students to externalize their perceptions of knowledge and knowing (which is what I tried to prompt the students to do in the course described), we can open them up for public scrutiny and examination. At the very least, it affords the opportunity for their "artistic consciousness—understood as a unity of all the author's semantic and expressive intentions" (Bakhtin, 1981, p. 285)—to realize itself. For teachers, such public scrutiny makes the students' epistemological orientations more visible, so can help personalize the curriculum according to the individual students' needs. The learners themselves develop richer expressive vocabularies, thus gaining deeper meaning of the concepts they investigate. For the researchers, such artistic externalizations allow the participants' internal stances become public with minimal researcher intrusion.

On a humanistic note, the authorship of the various *forms* of interpretation that the respondents are enabled for, including the artful expressions, make an important contribution to the qualities of this methodological approach. In the earlier chapters, we saw how the students shaped the form of their interpretation by the selections they made,

and by referencing and emphasizing that which resonated with their thinking. Like any creation of a new form, this can be seen as an artful experience.

My own effort as a researcher became an artful experience as well, as I had to come up with a form that would most adequately describe the nature of personal epistemologies. This form was shaped by both the essential features of the responses, and by my own inquiry that the nuances of the responses initiated. This form is still under construction. The speculations that I shared above were to illustrate this process.

APPENDIX B

TE-150: Major Exam, Part II

Renaissance Man: Essay Questions

You will watch excerpts from the video "Renaissance Man." Write an essay about what you observe in the film. Include in your answer: 1) A brief description of the specific situation you refer to (WHAT happens); 2) A statement characterizing the roles of the actors and the nature of communication between them (HOW is it happening); 3) Your assessment of the reasons that cause the things to happen the way they do (analysis of the 'WHY' for a specific event to happen).

Below are examples of the questions (suggested, but not limited to!) that you may ask yourself when writing your reflective essay:

1. What role(s) does the teacher play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (teacher's behaviors) from the movie.

2. What role do the students (or one particular student) play as the course evolves? Consider two or three different points in time and provide your answer with specific examples (student behaviors) from the movie.

3. Describe the language use in the scenes observed: the nature of communicative situations and the characteristics of language used by both the teacher and the students.

4. What kinds of narratives do students tell in class? How do those relate to their backgrounds? How do those relate to their interaction later in the course?

5. How does Bill Rago deal with the students' discouraged confidence and willingness to learn? What served as stimuli for the students to learn?

6. How could you describe Bill Rago's teaching philosophy? Which concepts from your reading fit or do not fit with the philosophy of this teacher? Why do you place him/her in this philosophical "camp"?

Your response should include definitions of the related perspectives. A strong answer would also identify one or more scholars whose work was representative of the perspective(s) you refer to. You may continue writing on the back of this page if you need more space.

APPENDIX C

Copy of the Text from the TE-150 Course Web Page "Renaissance Man"[51]

"Renaissance Man" or

One Man's Mission To Teach The Few, The Proud... The Impossible!

What follows is a kind of a summary of what one might have observed in this video. It may be helpful as an example of how one may incorporate what one sees or reads into one's thinking about learning and teaching. Watch how this unlikely new teacher and his "underdog" class unexpectedly inspire each other to be all they can be!

We learn most when we try to express what we are trying to understand...

The Unfolding of One Teacher's Motivation
(an example of possible connections)

Bill Rago is the down-on-his-luck businessman who desperately takes the only job offered - a teacher in the army. Initially, he assigns the students to write the personal stories "Why Did You Join The Army?", without any special purpose. Something happens while he listens to those students' stories, though...

The son of the soldier finishes his story almost crying. Bill's eyes, body, his whole appearance indicates empathy to this guy. He sees him now differently - not as one of "the ragtag bunch of underachieving misfits flunking out of basic military training".

More so, Bill sees his own role in the class differently. He is now willing to tell his students HIS story, to share HIS inner world, his very intimate PASSION which is Shakespeare. Now, he is willing to overcome the barrier of the students' 'not knowing', the total absence of their prior knowledge about Shakespeare, literature, theater...

Bill's intuition and imagination begins to work that, in turn, infects the students' imagination: change in their minds is happening, learning is happening...

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[51] Content of the TE-150 course web site: http://www.msu.edu/course/te/150/Sec13/RenaisMan.htm
Developed by Olga Kritskaya, Michigan State University, 1998-2000.

Note:

I prepared a series of clips from the movie that were posted to the course web site for my section of TE-150.

21 clips were shown in class in the sequence following the original plot of the film. It took about 25-30 minutes to watch all of the clips.

Clip 1: 'Fight'
Clip 2: 'Melvil Sleeps'
Clip 3: 'Heyward's Story'
Clip 4: 'Bryan's Story'
Clip 5: 'Perspective on Educational System
Clip 6: 'We're here, we're listening'
Clip 7: 'Melvil Speaks'
Clip 8: 'Language: It's Poetry...'
Clip 9: 'Learn To Servive'
Clip 10: 'Circle Time'
Clip 11: 'Toward Achievement With Shakespeare'
Clip 12: 'Rhythm: What It Does'
Clip 13: 'The Renaissance Man'
Clip 14: 'The Real Question'
Clip 15: 'Rap'
Clip 16: 'The Choices We Make'
Clip 17: 'Stratford: At the Play'
Clip 18: 'Final Exam Announcement: Victory Starts Here'
Clip 19: 'The Prize You Can't See"
Clip 20: 'For He ... Shall Be My Brother'
Clip 21: 'Final Exam'

APPENDIX D

Consent Form for Student Participation

Dear TE-150 Fellow,

The study in which you are being asked to participate concerns teacher candidates' perspectives on learning. As a developer of certain approach to instructional design, I am trying to understand how teacher candidates make sense of their learning experiences throughout their teacher preparation program. While no specific benefits can be guaranteed, the students' input may be informative and, thus, beneficial for the Teacher Certification Program at MSU. You may find this study an interesting opportunity to think about and articulate your ideas regarding your own teaching as well.

I am particularly interested to see how prospective teachers think about the nature of knowledge and learning. I am also looking at whether you were you able to use, and if so, how, something of what you might have learned in your Teacher Education classes so far?

I would interview you or ask to complete a survey form. I would also like to make copies of your web pages, art work (drawings/paintings/collages), as well as written work that you have completed in the class in order to keep some starting material to compare. The interview should take about an hour and will take place at the time and location, which is convenient to you. The survey will be mailed to you and will take 15 - 20 minutes to complete.

In no way will your participation have any bearing on your grades or professional engagement. You will remain confidential. Information about you will be kept in secure locations. Pseudonyms and disguising personal identifiers will be used in any discussion or written report that may appear over time.

Participation is voluntary. If you do choose to participate in the study, you retain the right to withdraw your participation at any time or decline to answer any questions. Any questions or concerns regarding your rights as a research participant can be addressed by contacting David Wright, Chair of the University Committee on Research Involving Human Subjects, at (517) 355-2180. If you have any questions regarding the study, feel free to contact Dr. ---- at (517) ----, or myself at (517) ----.

If you would agree to participate, please, sign this consent form.

Sincerely,

Olga Kritskaya

Please check one statement below:

_____ I give consent that the interview may be audio-taped for purposes of making note taking easier. (You may ask that the tape recorder be stopped at any time.)

_____ I do not give consent that the interview be audio-taped.

Participant's name (Print): Date:

Participant's signature: Date:

Phone Number: E-mail Address

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