AN EXPLORATION OF ENVIRONMENTAL JUSTICE THROUGH THE THEATRE OF THE ENVIRONMENT: A CURRICULUM DESIGN AND EVALUATION STUDY

A Thesis

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in Partial Fulfillment of the Requirements for the degree of

Master of Science

by

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ABSTRACT

This study used a workshop format to create a space in which participants could reflect on the issue of environmental justice. A private reading of a one act play was at the core of this space. Concept mapping was used to both help the participants actively construct their own knowledge about environmental justice, as well as to help ensure that the production space around the play was reflective. The workshop ended with a group discussion of environmental justice as seen through the play and the concept maps.

The workshops were evaluated by the participants, who completed a written questionnaire. An important component of this evaluation was obtained through the use of the Contingent Valuation method, where participants were asked to assess the worth of the workshop by comparing it to commodities of everyday experience, as well as through a direct dollar value assessment. Participant response was favorable overall.

Analysis of the concept maps is offered to show how the author's understanding of environmental justice was clarified through the participants' insights, and to suggest how the concept maps could be used to anchor future instruction in each participant's current cognitive structure.

Several suggestions are drawn from the experience with this study to suggest how the workshop could be improved so that it might serve as a vehicle to support theatre professionals interested in social and environmental action.

This thesis includes reviews of 53 plays. These plays are analyzed to determine their relationship to a variety of environmental issues, their potential use as education, and their position within a categorization system derived in part from Aristotle's conception of unity of action.

This thesis also includes two complete curricula which are designed around plays in the Theatre of the Environment.

Finally, this thesis is offered to the reader as evidence that art and science can be integrated to inspire students to seek a meaningful education.

BIOGRAPHICAL SKETCH

Seen from the perspective of this Thesis, Robert H. Abrams Jr. is the latest link in a chain of scholars extending thousands of years into the past. As such, the author is indebted to a gathering of people far too numerous to mention all but the most critical by name.

The author is grateful to Plato for inventing the idea of the Academy, without which there would be no academics. Unfortunately, the author was not able to attend Plato's Academy, having missed the application deadline due to being born on June 16, 1967 in New York City.

The author would like to thank the Society for the Propagation of the Gospel in Foreign Parts for founding Trinity School in 1709 so that he could graduate Cum Laude 275 years later in 1985.

The author would like to extend his condolences to Mr. and Mrs. Leland and Jane Stanford on the death of their son, Leland Jr. It is certain that Leland Jr. has been pleased to see so many students graduate in his name for over 100 years, including in 1990 when the author graduated from Stanford University with a Bachelor of Arts in Human Biology.

The author would also like to extend his sympathies to Mr. Ezra Cornell for not convincing Mr. Stanford to build a Leland Jr. college above Cayuga's waters. Mr. Cornell should rest assured that his ability to push an inspired deal through the New York State Legislature has created an inspired university, and that blizzards are every bit as much fun as earthquakes. The author graduated from Cornell University with a Master of Science from the Field of Education.

To

Sidney Winters

who taught me that the world, like a statue, needs vision to grow...

who lives his life by the principle that
you should do things for people not to them...

and whose example I try to follow...

ACKNOWLEDGMENTS

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Chapter 1: Introduction to the Study

Prologue

I stopped by the Hangar Theatre recently to see one of their productions of educational children's theatre. As I was entering the theatre grounds, I noticed that the 'Entrance' sign had been made in the shape of an arrow. The arrow was pointing towards the road.

'That's odd,' I said to myself. 'The arrow should be pointing the other way to show the audience where to enter the theatre.'

On second thought, I realized that the arrow was pointing in the correct direction after all. The arrow points from the theatre to the world. The theatre is the entrance to the world: a world which must be created to become real.

General Background

The Action, or focus, of this thesis is 'community'. However, the reader should understand that community is not the focus of this study; rather, community is the focus towards which this larger work, of which this study is a part, is heading. There are a number of ideas, especially in Chapters 2 and 3, which seem out of place until they are viewed from this future perspective.

This study was an attempt to develop a workshop which uses theatre to teach about environmental issues in a critical, rather than didactic, manner. I

regard this study as first and foremost a research training exercise. As such, the study was designed more to highlight questions for future study than to answer questions.

The study design consisted of a pre-study questionnaire, a concept mapping session, a private play reading, an open discussion of the play and the concept maps, and a post-study questionnaire.

This study was the latest phase of my on-going investigation of the Theatre of the Environment.[1] In order that the reader might have a sense of context for the results, I have provided some history of the project in the next section.

As I will describe later on, this study started out as a study of conceptual change, but evolved into a curriculum design and evaluation study that had some interesting, and largely unexpected, secondary results. This study as it evolved has parallels to the "exploratory tutoring" phase of studies which Zietsman describes as a tutoring experiment (Zietsman 1993).[2]

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[1] This document also constitutes <u>The Theatre of the Environment</u>, 4th Edition. This edition incorporates and supersedes most of the material in editions 1, 2, and 3. I use the terms 'environmental justice', 'environmental racism', and 'environmental equity' more or less interchangeably. I will discuss the differences between them later.

[2] "Within the <u>exploratory tutoring</u>, instruction is not standardized and several tutoring strategies are explored in individual case studies where creative adaptations to student responses are made by the researcher/tutor. Attempts to improve the overall lesson design can be made..., until one converges on a preferred instructional sequence." (Zietsman 1993, p. 6)

Some history of the project

This project started in 1989, when I began an informal survey of associates who work in professional theatre.[3] I asked them if they had heard of any plays which dealt with environmental issues. The most common answers were either that they hadn't heard of any, or Henrik Ibsen's <u>The Enemy of the People</u>. Furthermore, neither William Eddelman, one of my advisors at Stanford University, nor Bruce Levitt, the chair of the Theatre Arts department at Cornell University, knew of any comprehensive surveys of such theatrical literature. (Abrams 1990, p. 2)

This led to the first phase of the project. I interviewed a number of theatre practitioners, and read the play catalogs from Samuel French and Dramatists Play Service in a search for plays which were potentially relevant to environmental issues. This resulted in a list of over 100 plays. (Abrams 1990, p. 8-11)

During the second phase of the project, I read about 24 of the plays, identifying those plays which I considered relevant. In the course of this phase,

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[3] In a certain sense, this project began even earlier. When I was a freshman at Stanford, I came across the idea that the ancient Greeks saw theatre primarily as a form of civic or moral education. By seeing virtuous people of legend and history move across the stage, the audience could learn to imitate them. "The truth of the second point [that man learns at first by imitation] is shown by experience: though the objects themselves may be painful to see, we delight to view the most realistic representations of them in art... . The explanation is to be found in a further fact: to be learning something is the greatest of pleasures not only to the philosopher but also to the rest of mankind, however small their capacity for it; the reason of the delight in seeing the picture is that one is at the same time learning – gathering the meaning of things." (Aristotle/McKeon 1947, p. 627) Thus, from the very beginning, this project has been an exploration of the educational potential of theatre.

I developed a categorization system for distinguishing between Theatre of the Environment of various types. I will discuss this categorization system later.

During the third phase, I developed a curriculum which uses the Theatre of the Environment, essentially a survey course using the plays and invited guests to support discussion of a variety of environmental issues. The course also incorporated drama exercises which helped the students to express their own ideas about environmental issues. The course culminated in a play written and performed by the students. I taught this course through Stanford's SWOPSI[4] program, an innovative program which allowed advanced undergraduate students, graduate students, and community leaders with special expertise, to teach courses for credit. Sadly, SWOPSI did not survive a recent round of budget cutting at Stanford.

My subsequent work - the Second Edition with Kent Goetz as my advisor, and the Third Edition with George Posner as my advisor - has paralleled the three phases of my original work at Stanford. The primary difference has been that there has been less emphasis on searching out new plays, and more emphasis on reading and categorizing plays which I have already identified. Moreover, especially in the Third Edition of the Theatre of the Environment, I placed more emphasis on exploring the educational potential of the plays which I have categorized.

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[4] Stanford Workshops on Political and Social Issues.

During the work on the Third Edition (Abrams 1992), I developed a syllabus entitled "Towards Environmental Equity". This syllabus was also a Theatre of the Environment survey course, but this time focusing specifically on environmental equity. In contrast to "SWOPSI 164: The Theatre of the Environment as an Educational Tool" (Abrams 1990, p. 19), "Towards Environmental Equity" made a concerted effort to link the plays with prose readings. To date, "Towards Environmental Equity" has not been taught.

My current work

My current work constitutes phase four of this project. I am investigating how the theatre can impact people's understanding of environmental issues. The results of this investigation should have implications for how theatre could be used as education. If this work is successful, it should point to ways that theatre of both artistic and educational quality can be made more widely known.

The primary objective of this study was to develop a short curriculum, usable as a 2 hour workshop, using the Theatre of the Environment to teach people about environmental issues, in this case environmental justice/environmental racism. The curriculum would be 'taught' to the participants. The curriculum would be evaluated by administering a written post-study questionnaire at the end of the workshop, by my own field note observations of the workshop, and by writing down important participant comments which emerged from the discussion phase of each workshop. An important component of the post-study questionnaire would be Contingent

Valuation questions. These questions would establish how much the participants thought the workshops were worth, thereby giving both myself and other theatre practitioners who might want to replicate the process a sense of what risks they might feasibly undertake if they decided to scale up the workshops: would people be willing to pay enough to meet the probable expenses?

A secondary objective was to create a picture of the participants' understanding of environmental justice/environmental racism uninfluenced by myself in my role as researcher/instructor. Originally, this objective was tied into an objective of measuring the conceptual change due to the workshop, but this objective had to be shelved for logistical reasons. Another secondary objective consisted of giving participants a variety of authorship options on their consent form. This was intended to indicate whether it was worth pursuing the idea of informed consent further as it relates to public versus private speech.

Please see Chapter 4: Methodology for a more detailed discussion of the research project conducted for this thesis.

Chapter 2: Conceptual Toolkit

This chapter contains conceptual tools which I have found to be of use when working with the Theatre of the Environment. Conceptual tools include philosophical perspectives, theoretical constructs or abstract ideas, and definitions. Some of the tools have been derived from my previous analysis of plays, while other tools are logical extensions of previously existing ideas. Part of the purpose of this current study and future studies similar to it, is to help confirm, refine, or discard these ideas.

Philosophical Questions

Why include racism as part of an environmental study?

I was first exposed to environmental concerns when I participated in a Wildlife Biology field course held in Kenya. I was awed by the wide open sky and the richness of the life around me. I came home with a sense of urgency, but I also came home with a perception that environmental issues equaled wildlife biology. What I have discovered since then is that the biology-society interface is at the core of my interest in environmental issues, and that environmentalism can and should be much broader than a narrow focus on wilderness.

The destination of this broadening is a place where we can acknowledge that a) otherwise admirable environmental initiatives can have adverse

consequences for certain classes of people[5,6], and b) people can use the language and business of the environment to intentionally harm certain classes of people. It is only prudent to investigate what those consequences can be. In some cases, the truth might be ugly, but a fuller understanding can only help us find a path to better solutions.

Finally, racism is a provocative topic. Dealing with racism may make participants vulnerable, but in the theatre, vulnerability often leads to strength. Therefore, throwing environment and racism together should yield interesting participant insights, as well as education.

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[5] The Detroit fishing problem is an example of this. West "found that minorities catch and eat fish for both recreation and food, while whites fish primarily for recreation." (West et al 1992, p.112) They found that Native Americans consume fish at a rate of 24.3 grams/person/day, blacks consume 20.3 grams/person/day, while whites consume only 17.9 grams/person/day. Consumption rates are higher for certain subgroups defined by an interaction of race and age, or race and place of residence. For example, older black anglers had a consumption rate of 31.93 grams/person/day. Rule 1057, Michigan's regulation that controls the discharge of toxic chemicals into Michigan surface waters currently assumes a fish consumption rate of 6.5 grams/person/day. Wisconsin uses 20 grams/person/day. (West et al 1992, p.110-111) Even using Wisconsin's stronger standard, white anglers would be relatively safe, while black and Native American anglers would not be. Thus, a regulation designed for the admirable purpose of protecting the general populace against toxic discharges has unintended, but nonetheless differential impact on different groups.

[6] Again, a standard of how much pesticide residue is allowed on food sold can be applied evenly to all food, and still produce a differential impact. In this case, children are more at risk. "The [National Academy of Sciences] committee found that infants and children differ both qualitatively and quantitatively from adults in their exposure to pesticide residues in foods. Children consume more calories of food per unit of body weight than do adults. But at the same time, infants and children consume far fewer types of foods than do adults. Thus, infants and young children may consume much more of certain foods, especially processed foods, than do adults. ... The committee concluded that differences in diet and thus in dietary exposure to pesticide residues account for most of the differences in pesticide-related health risks that were found to exist between children and adults." (NRC 1993, p. 4)

Environmental Justice

This section represents my thoughts about environmental justice at the start of this study. My ideas have evolved over the course of the study through hearing the participants' thoughts on the topic, and I expect that they will continue to evolve. (Please see the section entitled "What I have Learned from the Concept Maps" for my understanding of Environmental Justice as it has evolved based upon the results of this study.)

Ecology is defined as "the pattern of relations between organisms and their environment." (Merriam-Webster 1974, p. 230) Humankind is not at the center of this pattern. There may have once been a time when humanity was small enough to safely pretend that it was the center, but that time is not now. On the other hand, humanity can not be divorced from the pattern, though from some perspectives, the ecology of the environmental movement seems to be concerned exclusively with cute fuzzy animals.

Environmental Justice is based on the premise that humans play a necessary role in our planet's ecology. The survival and the flourishing of our home depends upon our balancing that role with an understanding of the larger pattern.

That larger pattern not only includes how humans treat the environment; it includes how humans treat each other. The effects of these human-human relations manifest themselves in the environment. These effects include patterns of the siting of waste dumps, of access to a safe food supply, of access to environmentally benign technologies, of presumptions of stereotypical

behavior, and of the degree to which the results of a person's labour vests in herself.

Environmental hazards to humans are patterns which know no race. The pattern of human response to such hazards will reflect prevailing social conditions. In this way, the environment can be an indicator of such social conditions, and perhaps a way of grasping those conditions as well. Sometimes the patterns of environmental hazards will result from intentionally discriminatory acts. Either way, the affected communities must acquire new environmental competencies to succeed in their quest for justice.

Racism is the art of blame; Equity is the science of ownership.

It seems to me that there are two fundamentally different strategies to obtain remedy for injustice. A strategy based on blame asserts that the affected community's problems are caused by someone else, and that it is someone else's responsibility to solve the problem. By contrast, an affected community using a strategy of equity would assume responsibility for the solutions to its problems.

While a strategy of blame would be appropriate in response to intentionally discriminatory acts, I feel that in the long run a framework based upon equity will be more productive than a framework based upon blame or racism. Equity is also a useful concept because it allows us to deal with the environmental consequences of any number of unbalanced power

relationships - North v South, rich v poor, majority v minority, male v female, adult v minor, urban v rural - without having to recite a litany of 'isms' every time.[7] Furthermore, even if an act was intentionally discriminatory, if the responsibility for the redress is placed upon the discriminator, the discriminatee will always be in a dependent relationship to that discriminator and will be more likely to be discriminated against in the future. The benefits of a strategy of equity can be best illustrated by home ownership. If one rents a house and

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[7] "I strongly support your position that it is extremely important to focus on the biology-society interface related to environmental issues. However, I question whether you have captured this perspective using the descriptor 'RACISM'. In Webster, it says that racism is a "belief that race is the primary determinant of human traits and capabilities and that racial differences produce an inherent superiority (or inferiority) of a particular race". When you state that you are focusing on environmental consequences that may effect "certain classes of people", you are using racism in a much broader sense than it is defined.

I gather that you are concerned about some Brazilians in Rio, Mexicans in Mexico City, Indians in Calcutta, and other similar groups that suffer miserable environments. The people existing in these distressed situations are not suffering from RACISM, they are suffering because they come from a different CLASS (the poor). Of course, some people in a particular class may suffer poor environmental conditions because of racism, for example, some African-Americans in the U.S. and some Indians in the U.K.

Thus, although I agree with the focus of your thesis, I feel that you need another broad descriptive term for the CLASS of people that suffer environmental consequences. You should still include RACISM in your concerns about biology and society but as a subset of class or whatever term you use. Racism, as you know, is a "loaded term". Perhaps you could use the term 'ENVIRONMENTAL DISCRIMINATION' to include the broad class of people suffering pollution and other insults?" (Pimentel 1994)

The above analysis is one reason why I prefer the term Environmental Equity over the term Environmental Racism. Furthermore, since I use Equity and Racism to refer to strategies through which one can create Justice, Environmental Discrimination would be a good choice of a phrase to replace Environmental Racism when an author intends to refer to a wide range of sources of discrimination. Unfortunately, the term Environmental Racism is already widely used in the literature, so it is difficult to avoid.

I have included this footnote in part to make explicit the intrinsically collaborative nature of the research process.

makes improvements to it, those improvements would vest in someone else, the owner of the house. One would lose the value of those improvements when one moved away. In contrast, if one owns the house, one would retain the value of one's own work. The challenge of environmental equity is to find ways to realize similar benefits on a larger scale.

Why focus on the Theatre?

I originally chose to focus on theatre - as opposed to also including film - because I wanted to focus on a medium which has the potential to be produced with minimum cost and with minimum dependence upon technology. I wanted to focus on a medium which allows people to participate as well as observe. This participatory criterion eliminated novels from my focus. I have had extensive training and experience with the theatre, as an actor, technical person, director and playwright. I also chose to focus on theatre for practical reasons: doing so gives the project a manageable scope.

This focus does not deny the value of technology. It would have been equally logical for me to focus on a medium such as film. My experience with filmmaking is at least as extensive as my experience with theatre, and predates my experience with theatre by several years.

Further, much of my practical work and some of my theoretical work is concerned with the use of computers and electronic information. I see this project, focusing on theatre, as one segment of a media continuum. Different media are appropriate for different educational objectives. Educational impact can be maximized when different media are used in intelligent combinations.

At present, my central assertion regarding such combinations is that theatre is valuable for inspiring enthusiasm, for presenting dilemmas in all of their complexity, and for presenting whole perspectives, while media such as electronic documents are valuable for following up on such enthusiasm with detailed, interactive knowledge exploration.

Definitions

Portal Concept

The portal concept is the concept or idea through which I have asked the participants to see the material presented in the workshops. I started out calling this the key concept, but subsequently decided that portal concept had a better flavor. The portal concept for this study was 'Environmental Justice / Environmental Racism / Environmental Equity'. I chose this compound term because all three terms are used in the literature, sometimes with the same or slightly different meanings. I didn't want to restrict or lead participants to one particular viewpoint, so I decided to use all three as a single conceptual construct. In retrospect, I think this caused some confusion. It might have worked under the original design, where the participants would have read more than one play, and thus seen the construct from more than

one perspective. As a one shot workshop[8], there wasn't enough time to fully discuss the ramifications of each way of seeing the construct.

A portal concept can also be thought of as an advance organizer. (Novak 1977, p. 78)

Private Readings

A private reading occurs when a group of people get together to read a play out loud. No admission is charged and there is no advertising of the play itself, other than through personal contacts. Ideally, everyone who attends should be able to read a role. The number of non-readers should not significantly outnumber the number of readers.

Format Conventions

This document uses three format conventions which go beyond current standard usage.

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[8] One shot: The workshop would be held in one session. The researcher would have one shot, or chance, to work with each participant.

In-text Reference Tags

I have added a field containing the in-text reference tag to the start of each record within the bibliography. This addition serves four purposes. First, it allows the reader to easily identify the correct reference in the bibliography based upon the in-text citation. Second, it allows the author to use shortened in-text reference tags. This is especially useful where the author of an article is an organization with a long name, and where the author does not want the in-text reference tag to unnecessarily disrupt the flow of the text. For instance, if I wanted to refer to an article by the North American Association for Environmental Education, I might write (NAAEE 1990, p. 3), instead of (North American Association for Environmental Education 1990, p. 3). Third, it provides a way of creating a one to one correspondence between in-text reference tags and bibliography listings, even when there are multiple citations for articles by the same cited author in the same year, without forcing the author of the new work to create bibliography fields with inconsistent data types. In the standard bibliography format, the author might be forced to cite a year as '1990b'. The inclusion of in-text reference tags in the bibliography format avoids this problem. Finally, such inclusion would make it simple to enhance the usefulness of the document by allowing the reader to use the in-text reference tag to directly display the full bibliography citation should the document be released in an electronic format.

Graphics Markers

I have displayed all graphics in the format: dashed line <return> graphic <return> figure title as text <return> dashed line. This format is derived from my experience preparing the Proceedings of the Third International Seminar on Misconceptions and Educational Strategies in Science and Mathematics. Should this document be released in a text-only format, the format for graphics would collapse into a clearly identifiable marker indicating to the reader that there is a graphic at this location in the full version of the document, and would also give the reader a rough indication of the subject of the graphic.

Transcription of Concept Maps

When transcribing portions of concept maps, I will use the convention [concept] -> linking word -> [concept]. Basically, the square brackets [] indicate that the participant put the word or phrase into a box.

Theatre

Theatre of the Environment

I originally chose the phrase "Theatre of the Environment" to describe my work because I saw my work following in the tradition of Martin Esslin, who in reviewing theatrical literature, described the underlying principles of the Theatre of the Absurd, in addition to coining the term. (Esslin 1961)

Another reason for choosing the term 'Theatre of the Environment' was that 'Environmental Theatre' was already taken. 'Environmental Theatre' is a technical term in the theatre which refers to any production which occurs in a real setting - not on a stage. In an environmental theatre production, the audience often does not sit down, instead following the action from one space to another. Thus, if the first scene takes place in the dining room, the scene would be staged in an actual dining room in an actual house. If a character in this scene has an argument and storms off to the garage to sulk, the audience would walk to the garage to watch the next scene.

If I needed to make a distinction between the written text and the moving (enacted) productions of plays which deal with environmental issues, I would use Theatre of the Environment for the written text, and Earth Drama for the productions. I use the latter term out of respect for the work of Bill Talen of the Earth Drama Lab and Life on the Water theatres (San Francisco, CA), with whom I worked when I was based in California.

In summary, the Theatre of the Environment is a body of theatrical literature which deals with environmental issues, where environmental issues are defined broadly.

Classification System

The Theatre of the Environment is currently subdivided into three classifications. The classes are based on the presence of environmental themes in the action and in the detail.

I am using 'Action' in the Aristotelian sense. Action in this sense is not the physical actions of the characters. It can best be described as the thrust of the play. It is what the play is 'about.' It is the gestalt from which the audience derives catharsis. The action may or may not be a 'message.' "We have laid it down that a tragedy is an imitation of an action that is complete in itself, as a whole of some magnitude." (Aristotle/McKeon 1947, p. 634) Aristotle claims that a play can have only one action. "The truth is that, just as in the other imitative arts one imitation is always of one thing, so in poetry the story, as an imitation of action, must represent one action, a complete whole, with its several incidents so closely connected that the transposal or withdrawal of any one of them will disjoin and dislocate the whole." (Aristotle/McKeon 1947, p. 635) Many of William Shakespeare's plays are prime examples of how a play can be complex, and still have one action. Such plays often have a plot which involves upper class characters and intellectual ideas, as well as a plot which involves lower class characters and base humor. Both plots are driven by the same theme, and hence the play has a unity of action. I currently know of two shows which do not display a unity of action: The Barnum and Bailey/Ringling Brothers Circus (BBRBC), and <u>Falsettos</u> (Finn & Lapine 1993). The BBRBC employs three rings. The performance in each ring is unrelated to the performances in the other rings. The audience's attention can not help but be split; they can not absorb as much from each in three simultaneous rings as they could if they could watch each individually. <u>Falsettos</u>, as I see it, has two

actions: homosexuality, and growing up in Judaism. It is true that Jason's, the boy, central crisis in the second act - whether or not to have a Barmitzvah - is strongly tied to Whizzer, the character who is dying of AIDS. However, Whizzer could have been dying of malaria and the bildungsjudaism[9] action would have been equally coherent. Similarly, the author could have removed the force behind the bildungsjudaism action and still had a compelling story about AIDS.

The BBRBC and Falsettos are both fine shows. Their existence does not mean that Aristotle was wrong, but they do provide guidance regarding the dangers of writing a play without a unity of action. The BBRBC is a spectacle. It creates a profusion of color, light, and daring which rushes over the audience like a great wave. You aren't supposed to appreciate the feats as much as to be amazed by them. Falsettos has a very busy feel. There are aspects of the play which feel abrupt. All of the elements of the play do not fit neatly together. In this sense, Falsettos is much more like life than plays which do have a unity of action.[10]

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[9] This is an allusion to 'bildungsroman', the generic story of growing up. This term comes from the German, and is translated as "novel of formative education." It is a "class of novel in German literature that deals with the formative years of an individual." (Encyclopaedia Britannica 1993, p. 212)

[10] It would be interesting to look at whether the idea of unity of action might be useful in designing multimedia/hypertext programs. In such programs, anarchy (or non-linearity) is made into a virtue: the user can take and create many paths through the program. A designer might preserve this freedom of movement while creating unity of action either by making sure that each section of the program ties back to a central theme, or by asking the user to construct a single story as she moves through the program.

It is also possible to evaluate whether a lack of unity of action harms a play by asking, 'Do the two or more actions add to or enhance the meaning of the other actions, or do they conflict with or detract from each other?'

Class One refers to those plays which contain environmental themes in both the action and the detail. Class Two refers to plays which contain environmental themes in the action, but not in the detail. Class Three refers to plays which contain environmental themes in the detail, but not in the action. The class status of a play has nothing to do with its quality, though a poor play is more likely to be Class Three than Class One if the decision is a close call. Class Two seems counterintuitive at first glance. Nonetheless, it is possible to have a play with environment in its action, but not its detail. I want to caution the reader at the outset that all classification decisions are made through my own preferences and biases. Another might classify a play differently. If a play listed in this report intrigues you, read it and decide for yourself.

Class Two Theatre of the Environment at first glance is often a signpost for other researchers. For example, a Class Two Theatre of the Environment play might also be a Class One Theatre of Civil Rights play. However, this is not always the case. Class Two Theatre of the Environment can be seen as legitimately a class of Theatre of Environment when viewed through the following distinction regarding production styles.

The British/Germanic Dichotomy

I have found it useful to make a distinction between "British" productions and "Germanic" productions. The British/Germanic terminology is primarily

derived from a comment that Terry Hands, the Director of the Royal Shakespeare Company, made in a British theatre magazine: "If you want director's theatre, go to Germany. There you do old plays and twist them. If the RSC wants a political play we go and get one. But we don't layer it on to Shakespeare." (Hands 1985, p.7) While it is clear that I did not originate this distinction, it is likely that I am the first to use the terms in quite this manner.

A British production pursues an intent which the author explicitly placed in the play. A Germanic production pursues an intent which the author may or may not have intended. The director of a Germanic production is prone to twisting a work to varying degrees to make her intended point.

When I state that a play is "Germanic" I am suggesting that while the play is not directly about the environment, it could be used as such if it were produced with a Germanic directorial style. While "Germanic" plays do not have to be written in Germany, such plays and productions are (or at least used to be) frequent in eastern Europe. In this instance, the theatre community had no choice. They had to use classics, such as Shakespeare, the Greeks, and other 'neutral' works to carry their message due to the prevailing censorship.

Production Space

For theatre to be an intentionally educational experience, the director must consider both where and when the 'production space' stops. The tightest production space would ensure that all the information that the play is trying to convey is contained in the play itself. A slightly wider production space might have educational displays in the lobby and a mandatory or voluntary

discussion of the play and the issues it presents after the performance. A very wide production space might have the performance linked to an ongoing curriculum, such as the Earth Day 1990 K-12 Home Survey (available from the author as a part of ECCE!, the Electronic Cooperative Commentary on the Environment).

The New Pantheon of Aristotelian Actions

I have been struggling with the idea of how to properly contextualize theatre such as Roadside, an Appalachian community based arts company, and the African community theatre tradition. I finally came up with a way of dealing with these similar but different traditions, as well as with the criticisms often launched at both by the proponents of the Art Theatre, during South of the Mountain, a Roadside play.

The way of integrating it all is this. First, one needs to determine the Action of the play. Then one needs to determine whether the meaning of the Action is open to the audience's interpretation or not, and whether or not the author intended the play to direct the audience in some way. Thus, plays could be described as having Undirected Actions (soap operas and the like), as having Open Directed Actions (such as Pretty Polly, a Roadside play, with the action being cultural preservation), Penultimated Directed Actions (such as in South of the Mountain where the audience is led up to the point of being told what they

should think but stops short of that last step), or Closed Directed Actions (such as in <u>The Trial of Dedan Kimathi</u>[11]). I could also use the terms 'Uncompleted' and 'Completed' for Open and Closed, depending on which way I wanted the overtones of the terms to be biased.

Education

Educational Theatre should not be a Hammer

Educational theatre is probably the most misunderstood concept in the theatre world. My tenure on the production council of the Earth Drama Lab (San Francisco) provided some evidence for this. There were several people also on the council who were adamantly opposed to producing "educational" work. They felt that they wanted to produce quality theatre, and they did not want to impose a message on the audience.

I do not argue with the objective of quality theatre. However, I feel that it would be more productive to acknowledge that theatre is an inherently educational medium. Even a play with no author or directorial intent (such as a soap opera) influences its audience for better or worse by providing a model of how to live.

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[11] This play is a good example of the importance of situated cognition. When read without reference to its historical context, the characters may seem two dimensional, but when the reader understands that there had been an attempt in Kenya to portray Dedan Kimathi in exclusively negative terms, and that the authors created the play from interviews with people who knew him (Mugo 1993), the characters gain an added dimension.

To my way of thinking, the Lehrstueck comes closest to the ideal educational play. The Lehrstueck was developed by Bertolt Brecht. As I understand it, a Lehrstueck is a play with an explicit message. It is designed for use with a specific audience. Its objective is to create a consciously directed transformation within the thoughts of the audience. *Directed*, in this context, refers primarily to the intended direction which the audience's thoughts should take, though this intended direction is likely to only happen if *directed* by either the director or the author.

If such a work is written poorly, it becomes didactic in the worst sense of the word. However, if the play is written well, it will create an honest portrayal of the antagonists at issue. If done superbly, the message of the play may achieve some independence from the intent of the author. For example, there were several plays written by Brecht, which when performed for their intended socialist audience, said audience reached a very different conclusion than the one he had intended.

Since into every life a little soap must fall, the theatre practitioner interested in education needs smaller tools to supplement the Lehrstueck. Two such tools come to mind. First, the author can include relevant details. This might consist of a character saying "I drive a solar car," and then not belaboring the point[12]. Second, the theatre as an institution could educate about the environment, even if the play being produced has nothing to do with it. This would include

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[12] Such a comment could serve as an instructional anchor.

printing playbills on recycled paper, installing energy efficient lighting in the lobby and so on. To make the experience intentionally educational, notes explaining such measures could be posted in the lobby.

In any case, I have included this discussion so that no one will mistakenly think I am advocating using the theatre to hammer belief systems into anyone's head.

Critical versus Didactic Education

Didactic is defined as "1) intended primarily to instruct; esp. intended to teach a moral lesson, 2) having or showing a tendency to instruct or lecture others." (Merriam-Webster 1974, p. 205) As I understand it, didactic has overtones of telling people what they should know, believe, or do.

Critical education, by contrast, is what it sounds like in common sense terms. I, the instructor, provide the students with information and perspective, but I expect them to criticize it. Is it true? Are there new themes which are worth expressing? What are the consequences of this line of reasoning? Critical education leaves the instructor vulnerable to students disagreeing with her. In the case of a workshop such as the ones conducted for this study, it leaves open the possibility that a participant might come away unconvinced that environmental justice/racism is an important issue to work on. This may not be an acceptable outcome from an activist point of view, but it must be acceptable from an educational point of view.

I also sometimes refer to critical education as reflective education. This refers to a desire to create a space in which students have the time and the encouragement to actively reflect on the material they are learning. A significant part of that reflection will be critique of one kind or another.

While I do not intend critical education to be synonymous with critical thinking (and it is certainly not my intention to create a new buzzword), critical thinking does offer some insights into the kind of education I am looking for. When studying in a critical thinking mode, one tries to recognize difference of experience instead of letting it pass unnoticed. One seeks difference and seeks challenges. Challenges, both the moment in the process of solving the challenge and the solution itself, should be pleasurable. This is in direct contrast to the theory of cognitive dissonance which argues that people find difference painful and change their behavior to minimize this difference caused pain. "Cognitive dissonance is a state of tension that occurs whenever an individual simultaneously holds two cognitions (ideas, attitudes, beliefs, opinions) that are psychologically inconsistent. ... Because the occurrence of cognitive dissonance is unpleasant, people are motivated to reduce it." (Aronson 1984, p. 116)

Critical thinking also involves a continuum from immature thinkers who are reactive, to mature thinkers who are proactive. Much of my understanding of critical thinking derives from a conversation I had with Christine Saltzberg shortly after her Public Discussion of Doctoral Dissertation Proposal (Saltzberg 1994). Highly 'meaningful learners', learners who actively work to integrate new material with what they already know, are necessarily 'critical thinkers'.

It seems to me that there are two ways to look at whether or not someone is a critical thinker. Either the immature to mature thinker continuum is a stage

phenomenon (i.e. it is similar to Piaget's view of development that one progresses in cognitive abilities in stages linked closely with age), or the continuum is a matter of training (i.e. it is similar to Ausubel's view of development that while there may be stages, these stages are domain specific; thus a person could move on to 'higher' cognitive abilities at a young age, such as chess, but still be in a 'lower' stage with regards to some other domain, such as inter-personal relations). Superimposed on either of these two possibilities, I would argue that the immature to mature continuum is actually a potential. If a person is a mature thinker, but is facing large amounts of pressure and uncertainty, she may make short sighted, reactive, 'immature' decisions.

The diagram below (Figure 1) uses a nurse as an example because Christine Saltzberg's work focuses on nursing. It is intended to diagram my speculation about how the expression of the potential to think critically changes with changing external circumstances. The lines represent the forces of pressure (time pressure, money pressure, etc.) and uncertainty constricting the ability of the nurse to make decisions. When external pressures lessen however, the nurse has more time to consider and implement mature, proactive strategies (hence the second oval is larger than the first). Education should provide a space in which students can express their potential to think critically. The intent is roughly analogous to various kinds of speech exercises: if one wants to be able to control the rate of one's own speech in casual conversation, one should practice varying the rate of speech under more controlled circumstances first, and one should set aside the time for this practice to ensure that it happens.

Pressure

Nurse

as external
pressures lessen

Nurse

Uncertainty
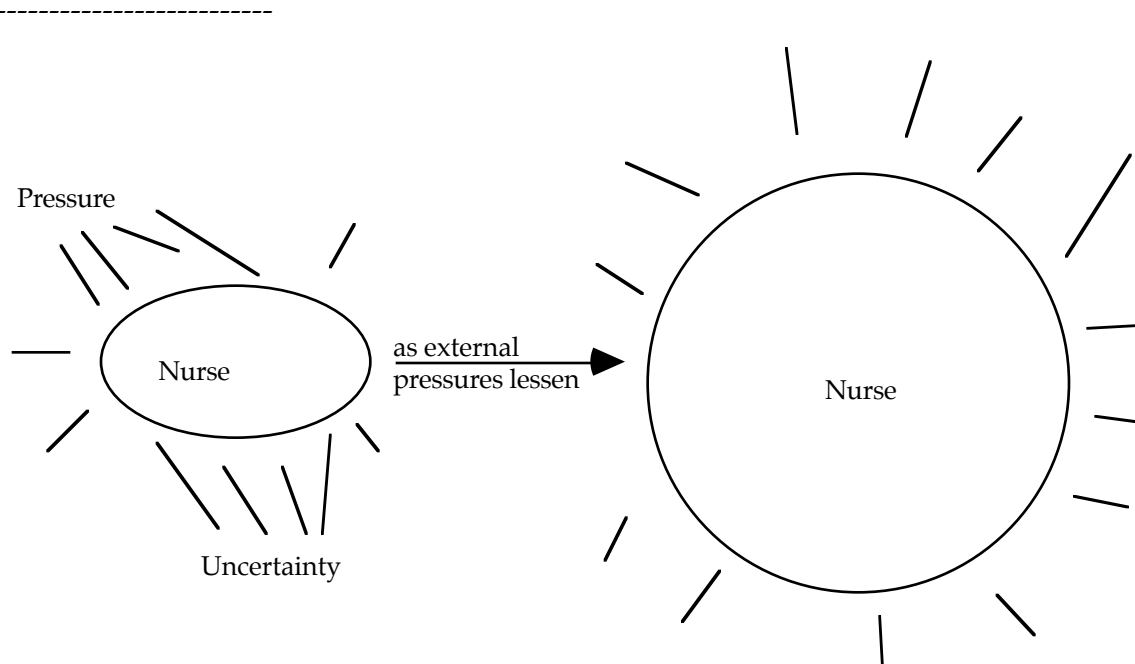
Figure 1. Education should provide space in which to think critically.

The job of education, or at least the objective of this study, is to design a
workshop which takes the educational potential of the plays and gives the
participants the time and space to think critically about the play.

Why are private readings suggested for critical educational theatre?

It seems to me that private readings are consistent with the theory of the
Zone of Proximal Development, an idea first suggested by Lev Vygotsky that
there is a limit to what a person can do on her own, but that there is a zone just
beyond this limit where a person can succeed in new tasks with assistance (the
ZPD): "The distance between the actual developmental level as determined
through independent problem solving and the level of potential development
as determined through problem solving under adult guidance or in

collaboration with more capable peers." (Vygotsky/Lyn 1934/1993, p. 5) With enough practice, the tasks for which she used to need assistance can be accomplished on her own, while her ZPD moves outward to new, more difficult tasks. Most people, in the society in which I am currently working, know how to read[13]. Therefore, even if they are not in the habit of reading plays as literature, they do read books, and reading plays is not substantially different. By reading a play aloud, with a group of friends, the play is given a fuller voice. The educational bond between the play and the reader is reinforced by the social bonds between readers. It does not take great skill or training to participate in such a private reading. This is in contrast to a full production. A full production will likely give the play yet a fuller voice and hence a greater impact on the audience, but it often looks like magic. A full production is a complex undertaking which requires the cooperation of many people. The average person is certainly capable of learning the skills to participate in a full production, but between the perceived need for skill, and the greater time demand, the average person is more likely to be intimidated.

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[13] The society in which I work is the United States, and moreover, is a sub-group which is very education driven. I am certainly aware that literacy is not universal in the United States. Play readings might be problematic in less literate societies, but they would not be impossible. Under such circumstances, I would probably start the introduction to theatre techniques with improvisation, and only later move to play readings.

The Dialectic of Verse and Prose

Most of the plays I have read to date for this work display an appalling lack of technical depth. Technical depth consists of both the amount of detailed technical information contained in either the play or the program notes, as well the sense that the author's references are accurate and that such references are used in an appropriate context.

Even plays which are obviously written with a strong issue oriented focus in mind do not substantiate their technical references. While as far as I know this has never been advocated before (and therefore one can't be too critical of this tendency in older plays), I would like to suggest a new way of interacting with the theatre which should simultaneously enhance the technical sophistication of authors while enhancing the educational value of the theatre.

Please keep in mind, especially here but elsewhere in this paper as well, that I have been READING theatre. It is my belief that the drama in a play can emerge in a reading (with the help of the imagination) as well as it does in a staged production. Therefore, references to interactivity can refer to the interaction of a reader with a script in addition to or instead of the interaction of an audience with a staged production, with digital video presentations being somewhere between the two.

I propose the creation of a dialectic of verse and prose. The theatre (verse) is an excellent medium for inspiring people. The theatre is also an excellent medium for presenting an intact representation of another's worldview. It is well suited to highlighting the ethical undercurrents which often escape notice

in the mundania of existence. However, the theatre is poorly suited to convey large quantities of factual information.

Technical prose, by contrast, is an indifferent source of inspiration. It is well suited to carrying the factual base upon which ethical choices rest. It is well suited to careful, intellectual analysis of the issue at hand.

I contend that a curriculum designed with a smooth flow from the theatre (verse) to technical material (prose) and back again would sustain the interest of the student far longer than a curriculum relying on either style of writing alone.

On a related note, Bretz has found that some students, especially women, who took a chemistry course based on the principles of meaningful learning discovered that science is not what they were led to believe it was in high school, and that science has connections to the other disciplines they studied in college. They discovered that "science is not just memorizing facts." These students also saw a difference between their science classes where they had been learning by rote, and humanities classes where they had been asked to interpret texts, where the answers were not known in advance the way they often are in science laboratory experiments. (Bretz 1994) Bretz's work augurs well for my contention that the humanities and the sciences can be successfully integrated into a single course. In other words, since meaningful learning in science and interpretation in the humanities are similar, it should be possible to integrate the learning of science and the humanities.

A recent small scale example of this dialectic is the 1 August 1994 performance of <u>Ride On, Zulu Woman</u> (Radebe-Mbata 1994). The program for

this performance contained a glossary of terms used in the play which audience members might not be familiar with and which the author felt were important to highlight.

Uses of This Work for Formal Education

While this work has been primarily conducted with non-formal and theatre-based education in mind, it can also be used in formal education settings.

For instance, I included the listing of male and female roles in the Index to the Play Catalog (Appendix D) because theatre directors in formal school settings must often select plays with roles that will fit the mix of students they have in a given year.

The modular design of the workshop of the current study could be adapted and incorporated into a variety of classes.

Chapter 3: Related Literature

How the Literature Review Fits Together

The Action, or focus, of this thesis is 'community'. However, the reader should understand that community is not the focus of this study; rather, community is the focus towards which this larger work of which this study is a part, is heading. There are a number of ideas, especially in Chapters 2 and 3, which seem out of place until they are viewed from this future perspective: a vanishing point[14].

The concept map below (Figure 2) describes one set of relationships between the various sections of this literature review.

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[14] The point towards which all lines in a perspective drawing converge.

Community

Tools, both physical and conceptual, can not be fully understood without seeing them from the perspective of the community who uses them.

A community exists because of a set of shared meanings. Concept maps help to make individuals' meanings explicit, which makes finding or creating shared meaning easier.

Our society is becoming increasingly diverse, both domestically through changing demographics and internationally through an increasingly global marketplace.
It would be both prudent and responsible to find effective ways to teach science in this context.

impacts the health of the community

Choices must be made. These choices have both a direct cost, and an opportunity cost relative to other goods a community might desire.

People work cooperatively to a significant degree practically everywhere except for much of the formal school system. Various computer tools can be used to teach this critical community building skill.

Environmental Justice

Plays about Environmental Issues as Education

plays show the reader how environmental issues are situated in the community as seen by the author

creates space in which to reflect about the play

computers and theatre provide a balance of cognition and affect

can Art and Science be integrated?

helps participants evaluate the workshops in which the plays are read

Situated Cognition

Multicultural Science Education

Concept Mapping

Computer Supported Cooperative Work

Contingent Valuation

Figure 2. How the Literature Review Fits Together.

Literature Review of Concepts and Theories

Use of Plays about Environmental Issues as Education

When I started this project, there was virtually no literature which related specifically to the use of plays about environmental issues as education. I have been continuing my work over the last several years. In the course of searching for material for these earlier phases, I have not found much additional directly relevant literature. What I have found is described in the Social Action Theatre Groups Catalog in Appendix F.

I feel that it would be worthwhile to conduct a review of the Theatre as Education literature in a broader sense. To ensure that the review is grounded in actual practice, I would want to start this review in a way which parallels my original review of theatrical literature. I would want to contact a variety of theatre professionals, asking them 'Are there any examples of theatre as education, or books about theatre as education, which you think are particularly good examples of the use of theatre as education? Are there any examples which you think are particularly bad examples of the use of theatre as education?' Such a review is beyond the scope of this present study.

For readers interested in having a preview of some of what would be contained in such a review, I suggest the reader look at Micere Githae Mugo's work on the relationship of Orature and Human Rights, and Augusto Boal's work on the Theatre of the Oppressed. By starting with these authors, the reader will also begin grounded in an international perspective.

Multicultural Science Education

It seems to me that material which addresses issues of concern to multiple cultural groups would make a good basis for multicultural science education. Environmental Justice/Racism, which is concerned with the interaction of social discrimination with environmental factors in a range of communities including low income and minority communities, has the potential to be just such an issue.

I have reviewed a number of articles on multicultural science education which were recommended to me by Mary Atwater, a recognized authority in this field. The truth of the matter is that I do not find the articles to give a satisfactorily clear understanding of what multicultural science education is. Nonetheless, I will describe what I have found and take the matter from there.

Multicultural science education appears to revolve around the question of whether there is one or many science traditions, and if there are many, whether these traditions can exist together or not.

There appears to be a scale of the interaction of science traditions. This ranges from Imperialist to Integrationist to Robust multiculturalist (Matthews 1993, p. 3). The Imperialist approach takes off the shelf science curricula developed in the West and teaches them in non-western societies. In the Integrationist approach, "alternative understandings and ways of thinking about nature are recognized, respected and made use of, but ... only as a more effective means of having students learn about western science." (Matthews 1993, p. 3) The Robust multiculturalist approach recognizes native or ethnic or traditional science as an intellectually legitimate alternative to western science.

"In some places both traditions are fully taught and a 'best of both worlds' approach is taken, in other places, just traditional sciences are taught." (Matthews 1993, p. 3).

Matthews argues that "attention to the history of western science" (Matthews 1993, p. 11), and its historical interactions with western culture, such as "the momentous drama of Galileo and the Church ... [and] the nineteenth century encounter of religion ... with Darwinian naturalism and evolutionary theory" (Matthews 1993, p. 10) should help us learn how science education should interact with non-western or multicultural settings. He rejects the idea of multiple sciences, in part because the Soviet Union tried to develop a two-science model and failed. "The painful lesson for the Soviet Union, after purges of politically incorrect scientists and massive crop failures, was that ideology and culture had to adjust to what science reveals about the working of the world." (Matthews 1993, p. 9)

On the other hand, Stanley and Brickhouse argue that "one of the results of imperialism in Africa was the replacement of many indigenous sciences with western science. Indigenous agriculture was destroyed and replaced with a more 'efficient' but ecologically destructive Western agricultural process that produced greater profits for land owners (Jacobson 1989; Upawansa 1988). As a result, today in many areas of Africa, the farmers are unable to grow food for their own families and must live on land that has been perhaps permanently stripped of its usefulness." (Stanley & Brickhouse 1994, p. 13)

Ogbu criticizes multicultural science education not so much because western science put men on the moon and non-western science caused famine, but because multicultural science educators have failed to acknowledge the full and

varied scope of student achievement both across and within a variety of minority groups. "A ... reason for the inadequacy of the multicultural education solution is that it fails to separate minority groups that are able to cross cultural and language boundaries and learn successfully, in spite of initial cultural barriers, from those that are not able to do so." (Ogbu 1992, p. 6) This implies that one of the characteristics of multicultural science education would be that there are barriers to learning science which may exist for some groups but not for others.

In a summary of the history of science education in Africa, Jegede argues that "science teaching in Africa has not identified with context-specific issues related to what science should do for, and within the countries of the continent". (Jegede 1989, p. 191) Similarly, I would argue that science teachers need to identify what science should do for and within their own communities.

I think that Jegede has the right idea. The bottom line in science is power. Power in this sense can either be the [Science] -> leads to -> [New Technology] -> which creates -> [New Markets] -> which gives the users of science -> [a Higher standard of living] variety of power, or it can be the personal fulfillment-knowledge for its own sake kind of power. We teach because we perceive an obligation to an individual student or to some group of students. We need to ask what does our student(s) need to survive and prosper in the long run? Compared to this need, arguments over whether this method or that philosophy is or is not science is just an angel with super glue on her shoes dancing on the head of a pin tied down to a railroad track while a robust multiculturalist and a logical-positivist argue whether that thing chugging down the track and belching smoke is a train or a locomotive.

The debate around multicultural science education is grappling with an idea with many complex elements, and serious consequences regardless which path is chosen. Because of this complexity, and because of the political fervor that is bound to accompany any issue with serious consequences, the academic debate seems to deal with the past and the near future, but neglects the long term implications. What the multicultural science education debate (or at least the piece of it I have read so far) needs is vision, and for vision one needs Art; for one such vision, I suggest the reader consider <u>For I have Touched the Sky</u> (Resnick 1993).

Situated Cognition

Multicultural science education argues that science education should identify with context specific issues. There is an intellectual tradition, unrelated to multicultural science education, which argues similarly that regardless of what community is at issue "it is not possible to use a tool appropriately without understanding the community or culture in which it is used, [and that] people who use tools actively rather than just acquire them, by contrast, build an increasingly rich implicit understanding of the world in which they use the tools and of the tools themselves." (Brown et al 1989, p. 33) If one then takes the small step of seeing concepts as tools, one can argue that concepts can only be understood when they are situated in the culture that uses them.

"A concept, like the meaning of a word, is always under construction." (Brown et al 1989, p. 33) Since cultures understand concepts as they use them,

students can only develop a full understanding of concepts by themselves using these concepts.

However, school cultures do not reflect practitioner cultures. (Brown et al 1989, p. 34) Therefore, even when students are asked to actively use concepts, the tasks they are given are often situated in an artificial, or inauthentic, school culture, and so the students' understanding of the concepts become artificial or false.

Brown et al argues that teachers should use "situated modeling, coaching, and fading, whereby teachers or coaches promote learning, first by making explicit their tacit knowledge or by modeling their strategies for students in authentic activity. Then, teachers and colleagues support students' attempts at doing the task. And finally they empower the students to continue independently." (Brown et al 1989, p. 30)[15]

Brown et al argue for a kind of cognitive apprenticeship. Ideally, this would give students tasks with a purpose or audience beyond the classroom. It might lend itself to learning through concrete projects, or where concrete projects or travel to sites of the authentic problem are not feasible, use of what CTGV calls 'macrocontexts', where students are provided enough detail so that they can see and study a single case over a long period of time from multiple perspectives (CTGV 1990). At the very least, instruction based upon situated cognition would teach in such a manner that students understand that "you

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[15] Note the similarity to Vygotsky's idea of the Zone of Proximal Development.

aren't done when you get the answer." (Brown et al 1989, p. 38) For instance, students would still do math problems, but they would also understand and discuss in what context a professional mathematician or engineer might do the problem, why they need the answer, and what they would do with the answer after they have found it.

Macrocontexts are discussed in (CTGV 1990). Essentially, CTGV argues that traditional case based instruction as practiced in law schools and elsewhere is too limited. Students do not have enough material about the case or time to study it to see the material from multiple perspectives. Instead, they argue for macrocontexts, where students study a case for several weeks to a semester. In their case, macrocontexts are provided as videodisc and Hypercard stack information resources. They argue for the use of macrocontexts in large part because they want their instruction to be consistent with situated cognition, which argues that instructional tasks should be authentic, similar to the 'real', everyday experiences people have. Their archetypical case is logarithms. Students typically learn logarithms without any idea what this mathematical tool is useful for. Instead, the student should be given a task which they have a compelling reason to undertake which leads to a need for this tool. CTGV argues that their concept of macrocontext is useful also because while ideally if one wanted a student to study water quality, they would go to the river and study it, the extended field trips that would be necessary for this may not be feasible. The videodisc based macrocontext provides a reasonable substitute.

I would certainly agree that electronic resources of various types are valuable for bringing reasonable facsimiles of situations to students that the students have no way of getting to themselves. Moreover, this idea is not

dependent on modern electronic technology. The idea of transporting people to new places was one of the original promises of motion picture technology at the turn of the century. "The moving picture machine is an advantage – a tremendous, vital force of culture as well as amusement. An economy, not only of money but of experiences – it brings the world to us – it delivers the universe to our theatre seat." (Starr 1909, p. 21)

Nonetheless, my instincts tell me that the CGTV macrocontexts, as I understand them from the literature I have read to date, have a potential pitfall. Because they are essentially closed scenarios: the basic facts of each 'Jasper' adventure are completely invented and contained within the videodisc program, they may lend themselves to conversion to inauthentic tasks to a greater extent than the authors intended.

A theatre/computer macrocontext would be different because it would be a purposely open macrocontext. Unlike video or film, where the characters already have life blown into them for the viewer, when theatre is used as play readings, students must participate from the very beginning. In addition, following the Pimentel model, students would have a significant say in determining the initial problem statement to be addressed.

As a side note, (CTGV 1990) uses the phrase "anchored instruction". This use is significantly different from my use of anchor terms following Zietsman. CTGV uses anchored instruction to refer to the macrocontexts. In this sense, instruction is anchored in these contexts that the instructor provides. In the Zietsman sense, instruction is anchored in specific student responses which, while perhaps incomplete, have some grain of commonly recognized validity. These two types of anchoring are not incompatible. An instructor could create

an anchoring macrocontext which she believes will have some connection or entry to the students' everyday experience. Then, once the students have begun to engage in the macrocontext tasks and have produced some products, such as concept maps or essays, the instructor can analyze such products for anchoring situations that suggest where the student might move next in the macrocontext.

There is a connection between situated cognition and multicultural science education. If it is not possible to use a tool fully without understanding the culture in which it is used, then it follows that science, a tool, can not be understood without understanding the culture in which it is used. Science as used will necessarily be different in different cultures. In a context with multiple cultures, a situated understanding of science as used in only one of the cultures would still be an incomplete understanding.

I recently came across a poster which I think is an interesting example of instruction informed by situated cognition. This poster is a "Periodic Table of the Elements" (Miles 19??). It shows the elements in the arrangement typical of modern periodic tables, but it also shows pictures and descriptions of uses for each element.

The Heideggerian Dialectic

"According to a Heideggerian approach, an interpretation along the lines of *existential phenomenology*, the hammer belongs to the *background*, it is *ready-to-hand* ('zuhanden') without reflection in the carpenter's world. It must primarily be understood as a *practical artifact* ('Zeug') that he uses in his everyday life, not

as a thing or object external to him. ... To use the hammer, our carpenter must in this sense understand what it is meant to be used for. ... However, as in the Cartesian approach, we also relate as subjects in detached reflections. ... For our carpenter, the hammer exists as a hammer only when it does not work or is not there - when it becomes unready-to-hand. Reflective, investigative, theoretical knowledge requires an *unreadiness-to-hand* of what before was ready to hand. A world of objects becomes *present-at-hand* ('vorhanden'). ... This process of change from readiness-to-hand to present-at-hand is referred to as *breakdown*." (Ehn 1989, p. 63-65) To put it another way, I understand Ehn to be saying that ready-to-hand understanding is an understanding of the tool in the act of use, while present-at-hand understanding is an understanding of the tool in a detached, rational view.[16]

This Heideggerian dialectic is both good and bad. It is bad because the terms used to describe it, at least as interpreted by Ehn and translated from the original Swedish into English, are too similar to each other. It seems to me that if I am *present*, I am probably already *ready*. This dialectic is good because it may provide a way of reconciling an argument over the translation of Aristotle that has divided the theatre community for many years. Roughly speaking (and I can only speak in rough terms here since I am not a scholar of Ancient Greek), Aristotle claimed that drama influenced the audience by creating catharsis. The question has been, did Aristotle mean catharsis with the action

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[16] This is not intended to be a comprehensive discussion of Heidegger. It seemed relevant to the discussion of situated cognition, and so I have included this discussion of Heidegger based upon my understanding of his work as I was introduced to it.

or the characters, or did he mean catharsis from the action or characters? What can be loosely described as the Stanislavsky/Method school of acting argues for the 'with catharsis' interpretation, while the Meyerhold/Brecht school of acting argues for the 'from catharsis' interpretation. If you hold with the 'withs', you want the audience and the actors to experience the feelings which the characters feel. If you hold with the 'froms', you do not want that result; instead, you want the audience and the actors to understand the characters and the action in a more rational way. This is what Brecht meant by the term usually translated as 'Alienation', but which I think is better translated as 'Distancing'.

If Heidegger and Ehn are right, there is no conflict. Both types of catharsis are necessary. Furthermore, a probable corollary of this is that educational theatre can not be created by one play alone. To fully succeed, educational theatre needs to be seen as a management challenge: a theatre as an institution needs to ensure that its audience is exposed to a wide range of plays.

A Heideggerian Critique of Situated Cognition

Situated cognition is all well and good, but it is only half of the story. Culture can be both a trap, as well as a source of strength. As Pelle Ehn, following Heidegger, said, tools can be both present at hand and ready to hand (Ehn 1989). Situated cognition would immerse us in everyday experience,

immerse us in the act of using the tool. But there also comes a time when we must look at the tool apart from the act of use. There comes a time when we must see the powers hidden in the tool that the very act of use obscures[17]; and every now and again there comes a time when we must see the tool apart from us so that we may have the strength to throw it away.

An extreme example will shed some light on what I mean. Was slavery a tool? Yes. It accomplished a variety of goals which the users of the tools felt to be important. It had a culture. If we were educators then as we are educators now, slavery would be everyday experience. And if, as one interpretation of situated cognition would have it, we are obligated to teach by enculturation into everyday experience, then we would be obligated to teach by enculturation into slavery. However, if situated cognition is seen as one half of a dialectic, we would be obligated to teach by deculturation as well.[18] If we can teach in a way which allows us to escape from our culture, to see it apart from ourselves, we can throw away the tool. And perhaps, and perhaps more importantly, in throwing away the tool we can throw away the culture.

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[17] At least two examples can be drawn from Kline's work on the history of technology. "Like Maxwell's circuit equations, which were developed in the 1860s to understand the induction coil, negative feedback was not tied to the technology of its origins (vacuum tubes) and became a fundamental principle of electrical engineering with innumerable applications independent of the original hardware used for its invention." (Kline 1993, p. 82) See also (Rosenberg 1994, p. 9), "A review of many important innovations, from the steam engine to the laser, shows an unsettling pattern: we can seldom predict the full technological, economic and social impact of inventions, even long after their commercial introduction."

[18] Deculturation? What a horrible sounding word. It rolls off of the tongue like a clot of frozen milk. However, it is the opposite of enculturation, so the reader will have to endure it for the sake of science until a better word can be found.

Especially if you agree with the logic of situated cognition, that culture consists solely of the interaction of the agent and the material created in each moment (Young 1993), then when you throw away the tool you must throw away the culture.

This is not to say that you should forget the culture when you throw it away. Old chains have a way of turning into new chains that looked like a good idea at the time.

Having said all of this, I would like to offer another challenge to the philosophical underpinnings of situated cognition. Situated cognition is vulnerable because it depends upon the existence of culture. Following Stewart[19] (Stewart 1985), one could argue that culture as such does not exist. Only individual behaviors and desires are real. When you put enough people together there are emergent patterns which look like a separately existing entity called culture, and there certainly is a flow which is given coherence by the path worn by our ancestors leading downhill to the sea and the expectations of future generations as we conceive them pushing us from behind, but it is just that, a flow. Or to put it in a post-modern context, culture is a series of images that we have borrowed from the past, but it is we, as individuals, who breathe life into these images, it is we who determine whether the images have meaning and depth, or sterility and flatness.

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[19] "A change is made in a culture when a need is perceived. [Change can be] perceived by the group, or forced from the outside [, but] change often starts with one person. Then he has to convince others." (Stewart 1985)

Computer Supported Cooperative Work/Collaborative Communities

This section is primarily a short serendipity search: a search for materials which are only tangentially related to the main focus of the work, but which are likely to provide valuable, broadening insights precisely because I am not looking for them. (For more on the concept of serendipity, see Cosgrove 1974)

I started this literature review by searching various bibliographic databases for the phrase 'collaborative communities'[20]. This revealed a variety of references to 'co-housing', a residential pattern with a combination of private living spaces, cooperative ownership structures, and some shared facilities. There were no references to computers.

A search for 'computer supported cooperative work' revealed a number of references, three of which are reviewed here, plus two references which I found through expert referral.

The ideas discussed in these articles are heavily intertwined with the concept of distance education. For instance, "The concept of distributed learning corresponds to that of distributed computing, in that with both concepts the acting power is distributed among nodes (with distributed learning, these nodes are learners with their computers) and the result of the activity depends

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[20] or to be more precise, 'collaborative adjacent (community or communities)'.

on the efforts of all nodes." (Heeren & Collis 1993, p. 108) By working cooperatively across a distance, a variety of educational players can have access to a superior human resource base. "Distance learning classrooms can be designed to have a wider, deeper range of student skills than a local site could offer; a higher quality teacher than a single district could afford; and ... greater opportunities for students to interact than traditional single-classroom settings." (Dede 1990, p. 252)

However, "a major limitation with many existing environments for the support of cooperative work is that most emphasis is on supporting cognitive processes, while the support of social and group-managerial processes may be overlooked or neglected." (Heeren & Collis 1993, p. 111) As a result of this neglect, "many groupware applications fail because the designers are naive about the organizational context, [for instance,] very often ignoring the inconvenience that subordinates must endure for the convenience of supervisors." (Newman 1990, p. 9)

If groupware fails because of neglect of social and organizational support, how can this support be created? Hereen & Collis discuss a variety of factors which contribute to the complexity of support needs. One such factor is participant distance. "This distance-related dimension ranges from problems related to learners working at different times within the same physical setting, [learners working at geographically distinct yet culturally similar settings,] to problems relating to language, institutional, and cultural differences among learners in different countries." (Heeren & Collis 1993, p. 114) Participant distance can consist of both differences in and the relative predictability of both place and time of work (Grudin 1994, p. 25) In this last sense, computer

supported cooperative learning, and distance education more generally, would inevitably create a setting with potential to address issues of multicultural science education because collaborative work across a distance would be likely to incorporate places with different cultures. Dede would probably agree. "An important equity consideration in implementing distance learning is making its benefits available to the entire student population, rather than only to gifted pupils who need a specialized course not offered locally. As discussed earlier, both the growing diversity of the student population and the importance of pluralistic experiences as preparation for the global marketplace make distance learning an attractive option for all pupils. Adoption strategies should stress open access to this type of information." (Dede 1990, p. 252)

One way to generate support within a project is to allow people, both students and teachers, to have ownership over a section of the shared system. In the Earth Lab project, "students and teachers could be assigned to any number of workspaces. For example, workspaces were set up for pairs of students to work on writing assignments together. Other workspaces served schoolwide clubs, such as the Young Astronauts. Each individual also had a personal workspace." (Newman 1990, p. 11) As a result of this shared ownership, "the science groups became a resource across the school. There had never [before] been a mechanism by which a social organizational structure created by one teacher in this school could be used by other teachers as a resource for managing instruction." (Newman 1990, p. 11)

By now the reader is likely asking, 'What does this literature review have to do with theatre?' "The learning experience [when using computer supported cooperative work] often has two aspects: learning about the subject matter,

and learning to work cooperatively." (Heeren & Collis 1993, p. 108) Theatre is also a form of expression that requires people with diverse talents to work cooperatively to succeed. These include not only the acting, but the playwrighting, the directing, and the technical aspects, such as lighting and stage design. After all, the best performance will be wasted in poor light.

Furthermore, "collaborative student groups aid in overcoming two weaknesses of the computer: they reduce the social isolation of learning from a machine and provide extrinsic motivation through peer approval." (Dede 1990, p. 254) This social isolation contributes to a situation where "the affective content of technology-mediated messages is muted compared to face-to-face interaction." (Dede 1990, p. 259) Theatre is an intrinsically social and, most of the time, a very affective medium. Incorporating theatre into a computer supported cooperative work curriculum should provide a very effective balance.[21]

While CSCW has the potential to overcome some of the social isolation created by the computer, there is no guarantee that it will solve this problem. "The computer is happiest in a world of explicit, concrete information. Central to group activity, however, are social, motivational, political and economic factors that are rarely explicit or stable. Often unconsciously, our actions are guided by social conventions and by our awareness of the personalities and

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[21] This review of CSCW provides evidence that serendipity searches are useful. It was only after I had conducted this review of CSCW that I saw the theme of affect running through several other sections of this thesis.

priorities of people around us, knowledge not available to the computer."
(Grudin 1994b, p. 97)

As a final point on this subject, I was surprised by the complete absence of
any reference in the computer supported cooperative work literature to
cooperatives as an organizational form. Some CSCW researchers have even
proposed dropping the second C in CSCW because "researchers and
developers focusing on organizational systems must attend to the conflicting
goals generally present in organizations" (Grudin 1994, p. 22) There is certainly
plenty of conflict in cooperatives, but the mere presence of conflict is not a valid
reason to abandon the quest to find new ways to work together cooperatively.

Since CSCW researchers, as they themselves admit, are bucking the usual
pattern of competitive, individualistic education, they might learn something of
value by looking at how cooperatives function. In addition, cooperatives could
provide a prime target market for CSCW, both because the ideologies of both
are similar, and because cooperatives are organized in ways that allow them to
afford capital expenditures which individuals might not be able to afford. For
instance, an individual might not be able to afford the sort of higher-end,
networked computer systems necessary to run the full multi-media CSCW
systems, but a co-housing group might be able to afford such an investment
for their shared facilities.

Literature Review of Methods

Concept Mapping

This study employs concept mapping as developed by Joseph Novak as a way of capturing a picture of the participants' understanding of the portal concept. (See Novak 1977, and Novak & Gowin 1984). Please see Figure 3 below for an example of a concept map.
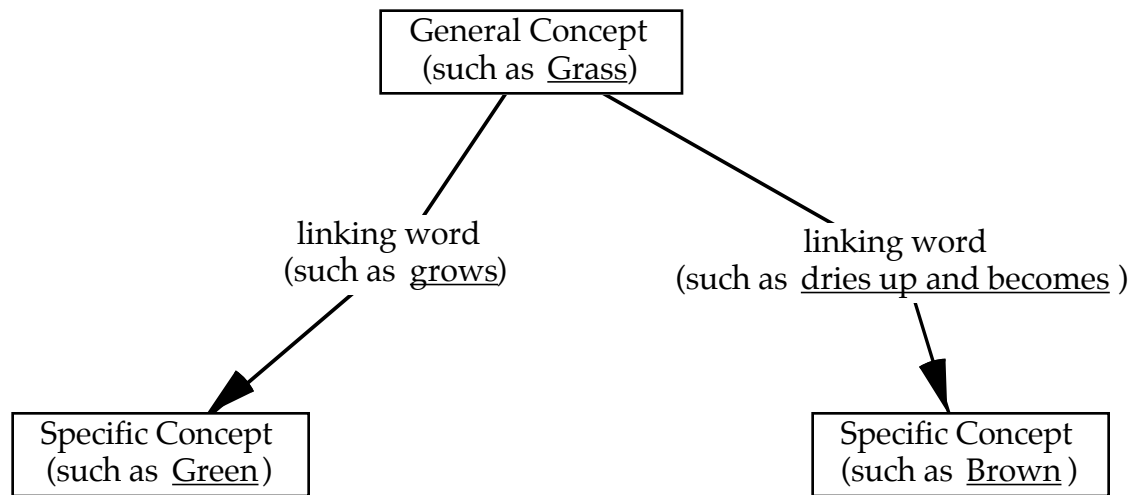
Figure 3. A Basic Concept Map in the Classic Novakian Style.

The basic Novakian concept map, as depicted above, usually starts with a general concept at the top of the map, and then works its way down through a hierarchical structure to more specific concepts. Concepts are placed in a box, while linking words are not. Lines are drawn from a concept to a linking word to a concept. Sequences of concepts and linking words do not always form grammatically correct sentences. This style is very simple and elegant. One can express complex and powerful ideas with a minimum of graphic elements.

This, of course, does not prevent one from constructing maps with different shape boxes, lines of different colors, multiple fonts, and other fancy features, so long as one makes an effort to avoid the mapping equivalent of 'chart junk': graphics where the very fanciness and impressiveness of the graphic impedes the viewer's ability to clearly understand the information the graphic is trying to convey.

Personally, I prefer a concept mapping style somewhat more flexible than the Classic Novakian. I have found that some concept maps work best if they start with a specific idea and work their way out to a more general idea. I feel that some conceptual relationships are dynamic, rather than hierarchical, so that strings of concepts which link into each other in a circular pattern are quite acceptable. The important principle, regardless of which style one chooses, is to construct clear concept maps. The concept mapper should ask herself, 'Who is this map for?' If the map is for herself, shorthand concepts are fine. If the map is intended to be read by others, she should take extra care to choose the words which most accurately describe her ideas.

Related to the issue of the graphic style of the concept map, the concept mapper also needs to ask herself, 'How much of her knowledge should she attempt to represent in the concept map?' Taylor has commented that "the exercise of mapping attempts to discipline this ecological unruliness [of real systems in nature], but without suppressing it." (Taylor 1990, p. 96) Regardless of the subject domain, there will always be many ideas which interrelate to each other. I take it as a given that there will always be new ways which can be found to pack ever more information into a concept map and still express the ideas clearly, but such ever-more-packing should not be a concept mapper's

only objective. First, even if there are ways to pack more information into a concept map, it doesn't mean that everyone can (after all, just because *someone* can run a sub-four minute mile, this doesn't mean that *I* have any reasonable hope of doing so.) Second, there will *always* be information which will not fit into the map. In addition to Taylor's suggestion of disciplining conceptual unruliness without suppressing it, the concept mapper might also want to consider Aristotle's principle of unity of action: What is the main idea of the concept map, and does each concept that appears have a necessary role in making that idea clear?

In my experience, there are two schools of Novakian concept mapping. One school says that concept maps are useful to test a student's understanding of a specific topic. This school also holds that it is possible to construct an 'expert' map, and grade a student's map by determining how closely the student's map matches the expert map. The other school argues that concept maps are useful primarily for the creator of the map. The process of concept mapping gives the student a structured space in which to reflect upon a specific topic. In doing so, the student should be able to clarify her ideas about that topic.

While I feel that both schools have validity, I lean towards the latter school. One reason to be leery of the expert map model is that "the metaphor of a map [should] not [be] intended to connote a scaled-down representation of reality, but instead a map [should] serve as a guide for further inquiry or action - to show the way." (Taylor 1990, p. 99) The expert model leaves the reader more prone to accept the map as reality. "Maps [also] work by serving interests." (Wood 1992, p. 4) What interests are the experts serving by creating their

maps? This service is not necessarily bad, but in a framework where students are asked to construct their own knowledge, it is incumbent upon us, when we are placed in the role of teacher-as-expert, to examine the consequences of the map beyond the page.

Concept mapping was originally developed as a way of "determining how changes in conceptual understanding were occurring in the students" [who were participating in a study of children's understanding of basic science concepts]. The researchers "began to search for better ways to organize the mass of data ... [from] large numbers of recorded interviews and typed interview transcripts." (Novak 1990, p. 937)

While concept mapping was first developed as a way of diagramming science concepts, the technique has been used in a wide variety of other fields.

Leahy used concept maps to help his students understand literature. "When this method [concept mapping] is applied to literature, characters, action, and symbols are the concepts. Given a map before reading, a student has a direction in which to travel, signs to consider along the way, and a destination to achieve. After reading, students can draw a map of what they have read, thought, and felt. On one page, students can condense their reading experience and give descriptions of their trip to others." (Leahy 1989, p. 62) Moreover, concept maps are valuable not just so that students *can* give descriptions of their trip to others, but so that they *do*. Moreira was on the mark when she wrote that "some teachers like to talk, and talk about the texts, and the students just sit there busying themselves taking notes. This monologue or soliloquy should be avoided: students must participate with their own opinions and views on the matter. The meanings should be shared in a dialogue." (Moreira

1977, p. 97) This emphasis on sharing meaning through dialogue is one reason

why I have been focusing on theatre as education: theatre is a medium

designed to be participatory.

Concept maps can be effective for affective, as well as cognitive,

instructional objectives. Jegede et al found in a study of biology learning that

"there was a tendency for the concept mapping strategy to significantly reduce

anxiety towards biology achievement in males." (Jegede et al 1990, p. 956)

They suggest that "anxiety, a situation of foreboding, which has been found to

affect learning (Tobias 1979, Fraser et al 1983, Novak et al 1983, Okebukola &

Jegede 1989), is certainly one of the pressures which exert considerable

influence on learners' intellectual competence and performance (Baird 1986). ...

The ability of the learner to control, determine, and make decisions about 'the

how' and pace of what is learned confers on the learner the advantage of

shaking free from the pressures which would otherwise impede meaningful

learning." (Jegede et al 1990, p. 957)

Finally, while concept mapping is often used to help a person make explicit

or create her individual understanding, concept mapping has also been used to

help people develop their understanding as a group. Heeren & Collis have

described three possible approaches to cooperative concept mapping using

their computer network-based concept mapping program. These approaches

include sending concept map documents back and forth, where each person

works on the map individually; asynchronous conferencing, where more than

one person can work on the same document at the same time, but each person

can only access one sub-concept map at a time, and the sub-concept map being

accessed can not be viewed by others until the first person is done; and

"synchronous conferencing, [where] all group members access the document at the same time and their screens have the same display, but there is only one cursor or pointer, that is controlled by members in turn." (Heeren & Collis 1993, p. 119)

Contingent Valuation

The participant evaluation of the current study will be assessed, in part, with a technique known as Contingent Valuation. This survey technique is being increasingly employed to assess a group's willingness to pay (often simply abbreviated WTP in the literature) for environmental clean-up, expansion of national parks, and other goods or services for which it is difficult or impossible to establish a true market.

My use of Contingent Valuation (CV) differs from the standard use in several respects. I will have been asking people to express a value for a service which could be a marketable commodity, though a commodity which the participants are not likely to have encountered before. I am also concerned that asking people to place a dollar value on the experience may create bad feelings or misunderstandings; that I am asking for payment when in fact I am not. To ameliorate such potential problems, I started with several close-ended CV questions which compare the experience to a familiar product, rather than a dollar amount. It seems to me that commodity comparison questions are also useful because people need to make decisions with serious consequences when dealing with environmental justice. Often, these decisions must weigh options with which people have no direct experience. Comparing such an

option to an amount of money is doubly problematic because, as I discuss below, money has no intrinsic use value. Familiar, everyday commodities do have intrinsic use values, so a commodity-comparison CV question should make the decision making process more meaningful. When I do ask an open-ended CV question which asks for a dollar amount, I make sure to refer to the use of CV in the legal system so that the participant is more likely to see the larger context of this work.

Prince asks when designing a CV question, "Does the description of the good and how it is to be paid for appear to be unambiguous?" (Prince et al 1992, p. 80) I feel that there can be no question of ambiguity about the description of the good because I will have asked the participants to value the good which they will have just experienced. I feel that the second part of his question is more problematic. Because the process under study has no financial history, it is difficult to provide a good breakdown of costs. In fact, part of the purpose of conducting this study is to assess roughly what potential market might exist for this entertainment/education process. Once this is known, proposed costs can be adjusted accordingly. Nonetheless, based upon Prince's question, I added a description of the likely major expense categories to my open-ended CV question.

Prince also advocates that "subjects [should be] informed of the incomes of others in their group, [and of] the valuations that others attach to the collective good." (Prince et al 1992, p. 82) Since I feel that asking for personal income information would be invasive at this stage in my work, I am not going to worry about this potential effect on participants' WTP. Exploring this effect,

and using Prince's contribution game variation of CV might be put to good effect in a future study.

There are two potential sources of error of which I am aware, and which have been described in the literature.

The first potential source of error is often called the "Good Cause Dump Hypothesis." "This hypothesis asserts that agents can be viewed as having a WTP for a basket of "Good Causes" and that when a CVM researcher comes along and asks them to value any constituent "good cause" in this basket, they "dump" the whole value for the basket into the stated WTP." (Harrison 1992, p. 249) This type of error is likely to cause the CV results to overestimate the 'real' WTP: the amount of money that people would transfer if the researcher were to actually collect payments for the good in question.

The second potential source of error concerns participants who find themselves unable to decide on a value. Schkade and Payne found that "20% of the sample said that they just made up a number or guessed at an answer." (Schkade & Payne 1994, p. 100) I feel that this source of error is partially mitigated by the commodity comparison CV questions, because I would argue that money has no intrinsic use value which a person can evaluate. The use value of money can only be established in relation to commodities. Thus, it should be easier for a participant to compare the workshop, a commodity with a directly experienceable use value, with another commodity with a directly experienceable use value, such as a loaf of bread, than to compare the workshop to money, a medium of exchange whose use value can only be experienced indirectly (by exchanging it for a commodity).

My speculation is that the CV portion of this study will give a reasonable estimate of whether or not this process is sustainable for a theatre or a school to undertake as a regular service.

There is a third potential source of error for which I have not found an adequate answer in the literature. This potential error concerns how to accurately calculate contingent valuation when participants are receiving compensation for their participation. This was not a factor in this study in the sense that participants did not receive monetary compensation for their participation. However, this potential source of error was a factor in the sense that some participants did receive non-monetary compensation: participating fulfilled part of a non-graded requirement for an introductory psychology course.

Chapter 4: Methodology

The overarching objective of this study has been to create a research and education workshop which is enjoyable for the participants, which stretches the participants' understanding, which yields useful research results, and which is doable given logistical constraints. The secondary objective was to identify questions to pursue further.

Qualitative Research/Grounded Theory

"A grounded theory is one that is inductively derived from the study of the phenomenon it represents. That is, it is discovered, developed, and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis, and theory stand in reciprocal relationship with each other. One does not begin with a theory, then prove it. Rather, one begins with an area of study and what is relevant to that area is allowed to emerge." (Strauss & Corbin 1990, p. 23)

Several aspects of this study follow the idea of grounded theory. For instance, when I started the work of reading the plays, I tried to let my ideas about what Theatre of the Environment was and the theory of how to use such plays arise from the plays themselves. The completed to uncompleted action continuum is an example of this process. As I stated above, I am interested in a critical kind of education and want to move away from a didactic form of

education. Is it possible to describe the degree to which a play is critical or didactic? The analysis of several plays, when taken together, seemed to provide an answer.

An important idea in grounded theory and similar approaches is to let the participants speak with their own voice. This was the main reason that I avoided telling potential participants what I thought Environmental Racism or Justice meant. I wanted to make sure that participants weren't just uncritically repeating my own ideas back at me[22]. I feel that this idea was valuable, because it made sure that I saw the participants' ideas about environmental racism/justice before they were influenced by the various elements of the workshop. However, I think it also caused problems. In addition to the problem of not being able to answer some people's questions when I was trying to recruit them as participants, I think that I may have made the idea of participant voice too important. This led me to refrain from offering my own viewpoint during the workshops perhaps more than I should have. Towards the later workshops, I tried to balance the idea of hearing the participants' voice with the idea of teaching.

I also asked questions to see what the answers would be. In more conventional research, *all* specific questions relate to a research question that one is trying to *prove*. In contrast, there were a number of cases where I was interested in a general topic, and asked questions so that I could get a sense of

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[22] The English idiom for this is 'spitting back'.

the shape of the data. Then, knowing the likely shape, it should be possible to ask more fine tuned, more directed questions in future studies. An example of this is the Contingent Valuation questions. I had come across the method in a class and thought it was an interesting approach. Having never done a Contingent Valuation study before, I did my best to ask some reasonable questions without being completely sure that the answers would prove anything.

The language of qualitative research has several flavors, often depending on the field in which a given researcher was trained. One such flavor which is similar to grounded theory is formative evaluation research. "In a formative experiment, the researcher sets a pedagogical goal and finds out what it takes in terms of materials, organization, or changes in the technology to reach the goal. Instead of rigidly controlling the treatments and observing differences in the outcome, as in a conventional experiment, formative experiments aim at a particular outcome and observe the process by which the goal is achieved. This format is commonly used in formative evaluation of software where the designer iteratively improves the product until it is successful in terms of appeal and effectiveness." (Newman 1990, p. 10) Once again, the objective is not to prove anything[23], but rather to construct something (in my case, a two-hour curriculum) and see if it works. After one has found a construct that

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[23] Karl Popper has conducted work showing that even the conventional scientific method does not prove anything. Instead, ideas can only be 'true' in so far as they have not been disproved. "Science advances through the 'falsification' of untenable hypotheses." (Novak 1977, p. 41)

works, the process is repeated, except that new goals are set which should optimize the functioning of the construct.

Presence of the Researcher in the Study

When I was taking science in high school, I learned to write papers in the third person, passive: 'It was found that ... ." Researchers working in the qualitative research tradition have come to realize that objectivity is not the flawless ideal we used to think it was. One consequence of this realization is the corollary that the researcher can not help but be present in the study. One way to acknowledge this is to write research reports in the first person, active.

My subjectivity is present in this study because, in addition to any motivations regarding environmental issues, I have a long range goal regarding the theatre. One critical goal of my work is to find a way to bridge the gap between academic theatre and professional theatre.

Initial Study Design

I originally planned to recruit a participant pool of approximately 25 people, high school age or older. I was then going to ask the participants to commit to a seven step study. They would have had to **1)** complete a Pre-study

questionnaire, **2)** construct two timed calibration concept maps[24] on a topic which is a) of interest to them, and b) is unrelated to the specific issue addressed by the study: environmental justice. The time would have been 1/2 hour to an hour for each map. This first session would have included some instruction in concept mapping. All of the concept mapping was to have been done on a computer. **3)** construct a concept map of their current understanding of environmental justice. Generative questions would have included 'What do you know about Environmental Equity/Environmental Racism/Environmental Justice?'. I might have also included secondary questions such as 'What about your community concerns you the most?' and 'Who or what is your community?'. **4)** participate in small groups for private readings of two plays which relate to the topic of environmental justice/racism. The readings would be followed by group discussion similar to the 'talkbacks' often practiced by theatres. **5)** construct a post-reading concept map on the topic of environmental justice. **6)** complete a Post-study questionnaire. This questionnaire would contain questions relating to learning and contingent

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[24] This refers to an approach to concept mapping which I subsequently abandoned. The idea was that I might measure the change in understanding of the portal concept by the difference in the two concept maps on the subject. I was concerned that some of the difference might be due to the extra time spent working on the second map, rather than to a change in understanding per se. Therefore, I was going to try to separate this extra work effect from the actual change in understanding by having each participant construct 2 maps on an unrelated topic for a specific amount of time. The idea was that by doing this, the participants would be acting as their own control group. Even before I began to collect data, I started to conclude that the information I would obtain from this flurry of concept mapping would be of dubious value. Data collection confirmed this. In general, people who knew a lot about environmental justice to begin with could work for much longer than an hour without saturating the page with their full understanding, while people who didn't know a lot to begin with would finish their map in less than an hour.

value. **7)** Finally, I would have interviewed the participants with questions determined after analyzing their survey data. During these interviews I would have attempted to probe into their conceptions of learning and value experienced during the study.

This design required that each participant commit to approximately 6 hours, in roughly three 2-hour meetings. I was not paying people to participate, partly because I didn't have a budget for such payments, and partly because I was concerned that such payments might contaminate the contingent valuation portion of the data. I am convinced that this relatively high time requirement contributed to the relative lack of volunteers. When I redesigned the workshop to fit in one 2-hour session, volunteer recruitment became significantly easier.

The Study Design as it Evolved

Round 1.

During Round 1, work with participants was conducted individually. Round 1 work occurred in the participants' homes.

During the first round, I had participants fill out a consent form. (See Appendix A) This consent form was fairly standard for non-invasive studies with one exception. The standard consent form offers confidentiality to the participant. However, it seemed to me that a participant might be proud of her participation, including the ideas she expressed in her concept map. Therefore, instead of simply offering confidentiality, I gave participants the option of

either requiring that I not include their name with their map, leaving the decision up to me, or requiring that I always include their name with their map. This approach has the potential to be more fair to participants in their role as author. After all, it is possible that someone might quote the map in the future. If the participant's name is left off, they would not get the credit that they are due.

Next, I had participants fill out a pre-study questionnaire. (See Appendix B) This questionnaire collected contact information, some demographic information, and the participant's appraisal of her own current level of understanding of five areas which I thought might be potentially relevant to the results: Environmental Racism, Environmental Issues, Racism Issues, Theatre, and Use of Computers. This appraisal was obtained with a standard Likert scale. I decided to use a scale where the steps in the scale are words, rather than numbers between the two extremes. I thought that this would create less uncertainty about what I was asking for.

Next, I introduced the participant to concept mapping. Using LifeMap, a Macintosh computer program I had developed, I drew a sample concept map and explained both the idea of concept mapping and how the program worked. I laid out the terms 'Environmental Racism', 'Environmental Justice', and 'Environmental Equity', saying that she could concept map any aspect of these issues that she wanted to. The participant then spent an hour or more constructing her own map. I occasionally engaged in conversation to help clarify a participant's question, but in general I tried as much as possible to refrain from making suggestions. Clarification in this case was mostly about

concept mapping procedure, but sometimes turned to the subject of environmental justice itself.

I used the computer approach to concept mapping for the first two participants. While observing these sessions, I came to the conclusion that the participants' self-expressed underlying anxiety regarding computers, and unfamiliarity with the track ball and other general interface components on the computer I was using, may have been inhibiting all that the participants might have been able to express regarding the subject matter. Starting with the third participant, I decided to switch to the Pen-and-Post-It-Note method of concept mapping.[25] This method was first developed by Novak, and has been enthusiastically promoted by McAdams. I had used this method during the Meaning of GreenStar Workshops, an earlier project conducted for the GreenStar Cooperative Market in Ithaca, NY.

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[25] In this method, the participant is given a sheet of paper, a pad of small Post-it notes, and a pen. The participant writes her concepts on the Post-it notes. These concepts can then be arranged and rearranged on the sheet of paper. Once the concepts are arranged, the participant can draw lines between the Post-it note concepts. Linking words are often written on the lines, though linking words can also be written on Post-it notes.

This method provides more flexibility in editing a concept map than drawing directly onto the paper. This flexibility mimics some of what can be achieved with a computer program, while not mandating the use of a computer.

Round 2.

While I continued to search for more participants, I was presented with an opportunity to do a workshop for a group. This group offered to set aside a hour or so after two of their regular weekly meetings. In the end only one such session was available, so I had to adapt.

I ran through the consent form and pre-study questionnaire as described for round 1. I had each person in the group construct their own individual concept map using the same Pen-and-Post-It-Note method described above[26]. We then did a private reading of <u>Dumping Ground</u> (Diggs 1982). The session ended with a discussion of the play.

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[26] When using concept maps to capture a picture of someone's understanding, I generally prefer the person herself to construct the concept map. I prefer this over a design where I would conduct an interview with the person, and then *I* would construct a concept map from that interview of the other person's ideas. I prefer the participant-does-the-drawing approach because I might improperly inject some of my own ideas and biases as I translate the interview into a concept map.

Having the participant review the concept map I would have drawn of her ideas can mitigate some of these problems. The researcher's presumed skill in concept mapping would allow a fuller picture of the participant's understanding to emerge if the participant has not been exposed to concept mapping before. If the participant *has* been exposed to concept mapping before, there is no advantage gained through the researcher drawing the concept map.

On the other hand, having the researcher draw the concept map for a neophyte concept mapper denies that participant an opportunity to improve her concept mapping skills. My judgment is that the educational gain for the participant outweighs the data loss for the researcher.

Round 3.

This round was identical to Round 2, except that I made sure that the group discussed the concept maps at the end. When I sensed a lull in the conversation about the play, I asked people to go around the table and describe their maps. This led to further discussion. The workshop was successfully completed in slightly under the two hours I had planned for. I conducted 4 of these workshops. At the end of each workshop, participants filled out the post-study questionnaire. During the last workshop, there was a short discussion about how the workshop went <u>after</u> the post-study questionnaire. One of these workshops was conducted in a participant's home. The rest were conducted in a conference room in Cornell's Education Department. In the conference room, I had a distinct sense of sitting *across* from the participants. I was on one side of the table and they were on the other. The home-based workshops had a more circular feel.

Sampling

The sampling strategy used for this study was a combination of opportunistic sampling (Patton 1980, p. 179) and maximum variation sampling (Patton 1980, p. 172).

"Fieldwork often involves on-the-spot decisions about sampling to take advantage of new opportunities during actual data collection." (Patton 1980, p. 179) This was clearly the case for this study. A case in point was the opportunity to conduct a workshop for the Cornell Greens. They had a specific block of time when certain people could participate. Since it was then

approaching the end of the semester, I either had to conduct the workshop for those people at that time, or miss the opportunity to collect the data. In general, I was willing to take anyone who was willing to participate. I was asking a lot from people, so I did not have an unlimited supply of potential participants. I also did not know what kind of results I might find. As a result, the information on who was willing to come forward and participate should be interesting. For instance, would there be just people who already have a good understanding of environmental justice, or a mix of people?

"For small samples a great deal of heterogeneity can be a problem because individual cases are so different from each other. The maximum variation sampling strategy turns that apparent weakness into a strength by applying the following logic: Any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared aspects or impacts of a program." (Patton 1980, p. 172) When I started this study, I had a loose hypothesis that since the portal concept is strongly connected to the concept of race, the race of the participants might make a difference in their response to the workshop. Since I envision continuing the study on a larger scale in the future, the collection of demographic information will allow me to identify areas in which the sample is unbalanced or lacking in diversity, and seek participants to create such balance and diversity.

Chapter 5: Findings and Discussion

In this chapter, I will report and discuss the findings from the various parts of the study. These findings will be discussed in roughly the order in which they were generated during the study.

Consent Forms

The results of the consent form options are presented below. The majority of participants left the decision of whether or not to include their name on their maps up to me.

The participants were given the following three options. Option 1 = "Do NOT include my name with my concept map." Option 2 = "You may include OR not include my name with my concept maps as seems appropriate in each case." Options 3 = "ALWAYS include my name with my concept maps." (See Figure 4.)
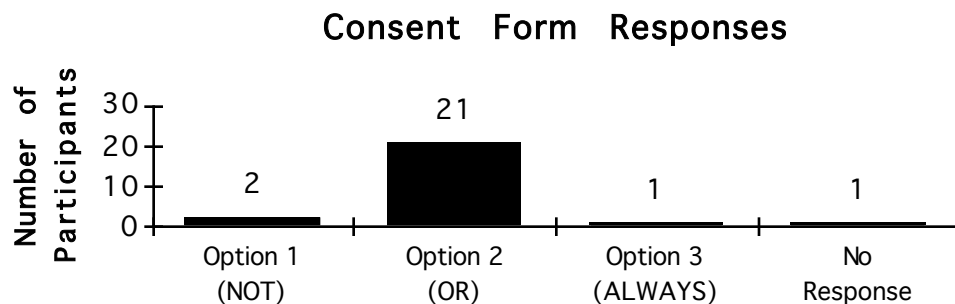
Figure 4. Consent Form Responses.

If participants had regarded this study similarly to other studies, the majority should have asked for confidentiality on the consent forms. Instead, most participants left it up to me.

It occurred to me during the last workshop that there may be an underlying problem with informed consent in general. Informed consent is an idea which academics have carefully developed to protect research participants. However, how well do the participants understand the idea of informed consent itself? It might be useful to conduct a study in which the participants are given consent options, participate in a short research process of some kind, and then are given the opportunity to reassess their consent options, and discuss under what kinds of processes or with what kind of information discussed would they have chosen a different option.

In the preparation of this thesis, I decided to use the 'P#' format to identify participants anonymously, rather than to use their real names. I did this even though I had permission to use their names, and, as I expressed earlier, feel it is fairer to acknowledge the participants' authorship of the concept maps. I came to this decision for two reasons. First, I am critical of some of the concept maps in my analysis of them. This criticism is intended as constructive criticism, but even constructive criticism can be taken the wrong way when taken out of context. To be consistent, I made all of the concept maps anonymous. Second, using participants' real names, even with permission, swims against convention. It seems to me that this is a situation where discretion is the better part of valor.

Demographics

The following section describes the demographic profile of the participants.

Age

Most of the participants to date have been students. One person did not want to provide her age, and so wrote "Mature" instead. (See Figure 5.)

Ages of Participants
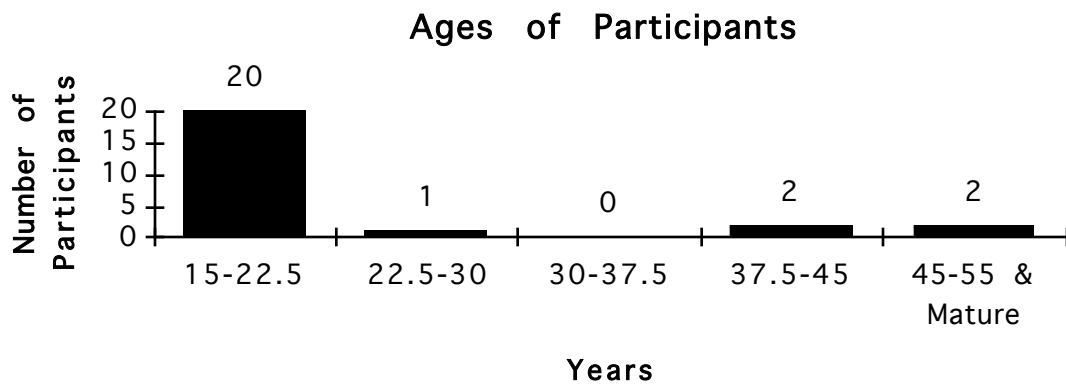
Figure 5. Age Distribution of Participants.

Gender

I know of no reason other than chance to explain the gender distribution of the participants. (See Figure 6.)

Gender Distribution of Participants
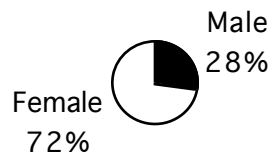
Figure 6. Gender Distribution of Participants.

Ethnicity

I have felt that the standard way of categorizing data regarding ethnic origin (also referred to as ethnicity or race) is limiting, and in some cases, false. Typically, one is presented with the five federally defined types (Caucasian, African-American, Asian/Pacific Islander, Hispanic, and Native American). While this classification has legitimate uses, I have two objections to it as a way of collecting demographic data. First, Caucasian is an ethnicity, but most of the people whom the standard scheme describes as Caucasian are not. They may be Irish, Italian, Jewish, English, or any number of other cultures. Second, I have heard non-Caucasian people vehemently object to their being classified with one of the standard terms for various reasons. Therefore, I decided to leave the ethnicity question open ended. I found it somewhat surprising that several people were not sure what they should put down for this question.

This suggests that it might be worthwhile to explore what ethnicity means to people in a future study.[27]

Ethnicity of Participants
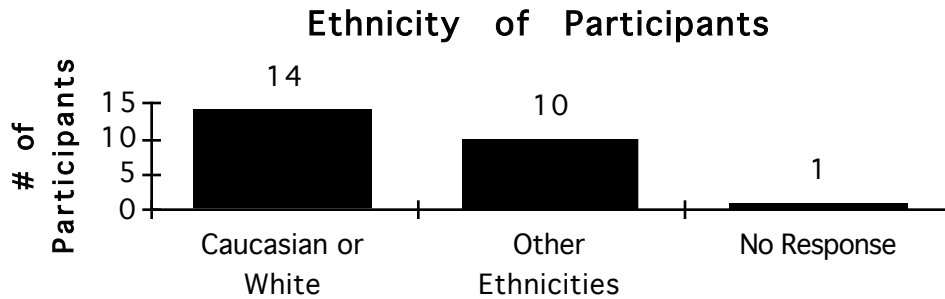
Figure 7. Ethnicity Distribution of Participants.

Of the Caucasian or White category in Figure 7, three responses were White. Of the Other Ethnicities category, there was one response each of African American, American Born Filipino, Caucasian/Asian, Colombian-American, Indian/Canadian, Irish/Puerto Rican, Italian/Latina, Mexican American, Asian-Indian, and Korean.

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[27] Ironically, one day after I had printed copies of an earlier draft of this thesis, I found an article which describes the problem of race and ethnicity classification in America in great, but very readable detail. (Wright 1994) This article describes the history of racial classification in America, discusses how the Office of Management and Budget Directive 15 was designed to collect data on race and ended up defining new racial groups in society, discusses Americans' perceptions of their own racial and ethnic heritage, as well as discussing the possible political ramifications of making racial classifications correspond more closely with reality. This article confirms what I have found in my study: that when given the option, large numbers of people do not define themselves by the official racial categories. I would suggest that every researcher should read this article before starting a new study in which they plan on collecting racial or ethnic data.

Educational Attainment

The In-College skew of the participants is a result of the means I have been using to recruit participants, largely through student organizations and Cornell classes. (See Figure 8.)

Current Educational Level or highest level attained

Category	Value
No Response	2
Doctorate	0
Masters	1
In Graduate School	1
College Graduate	3
In College	10
HS Graduate	1
In High School	7

Number of Participants
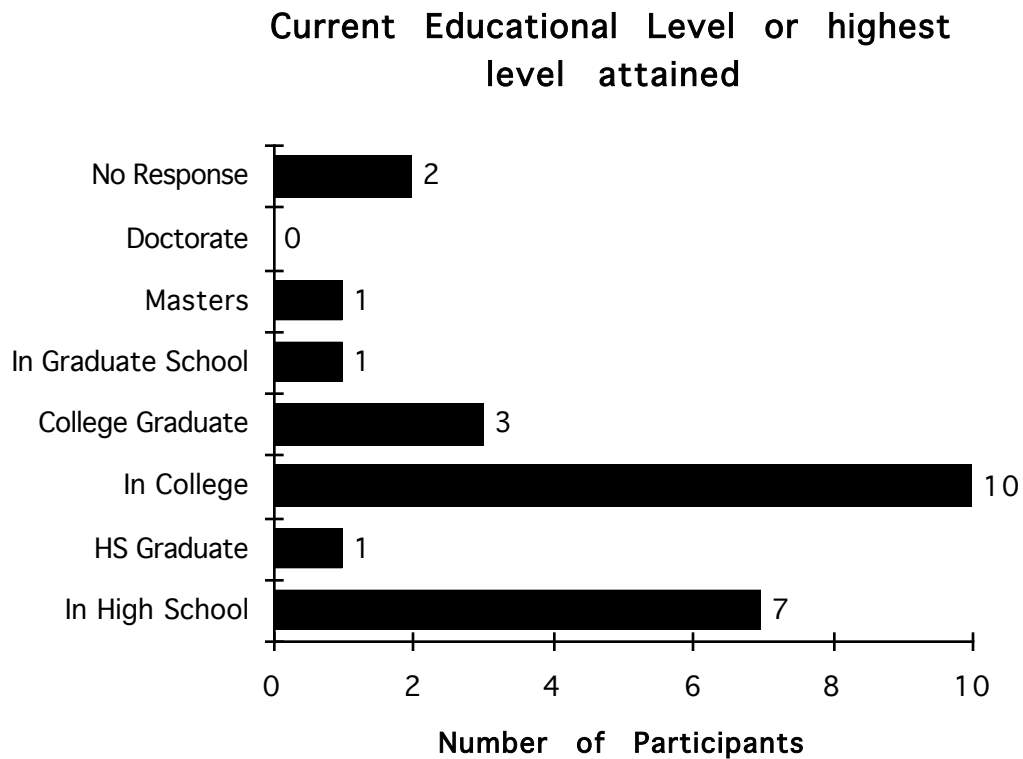
Figure 8. Educational Attainment of the Participants.

My participant pool is skewed toward young people, college students, women, and Caucasians. If this trend continues should I run more similar workshops in future studies, I should find ways to recruit people so that I can create a more balanced participant pool. Otherwise I might be missing important perspectives.

Self Estimates of Understanding

There were 13 responses in None or Minimal for Environmental Racism versus 1 response for Environmental Issues and 0 responses for Racism Issues. There were 8 responses in Good or Excellent for Environmental Racism versus 15 responses for Environmental Issues and 19 responses for Racism Issues. (See Figure 9.) This indicates that the participants generally felt they understood environmental and racism issues, but did not understand environmental racism. This was perhaps to be expected because environmental racism is a relatively new field. This result also parallels the questions I was asked before the study. When I would approach people to see if they would like to participate, they often asked "What is environmental racism?" This suggests that the people who work with environmental racism issues on a professional basis need to do more to help the populace understand what they are talking about. These results also help to answer the question, 'Did people who took part in these workshops do so to reinforce their ideas or were they looking for new ideas?' There appears to be a solid mix of people. This question would be worth asking directly in a future study.

Because I ended up not using computerized concept mapping for the bulk of the study, the 'Understanding of Computers' question was not directly relevant. If I were to do future studies similar to this one, I might ask a question about prior understanding of concept mapping.

Pre-Study Question Results: "Please estimate your current level of understanding of the following:"

Number of Participants

20

10

0

| None | Minimal | Some | Good | Excellent |

4 0 0 0 0   9 1 0 11 8   4 9 6 8 9   8 14 17 6 8   0 1 2 0 0

Legend:
- Environmental Racism
- Environmental Issues
- Racism Issues
- Theatre
- Use of Computers
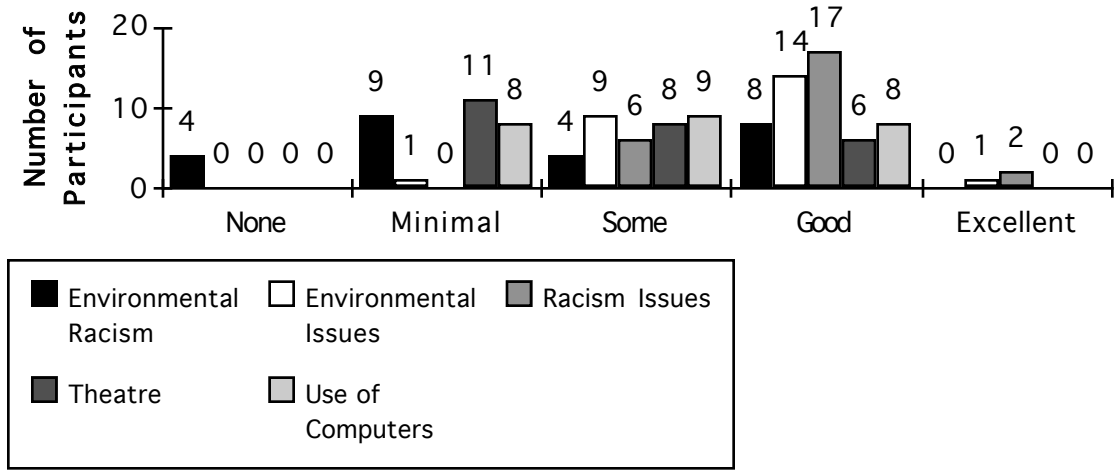
F

igure 9. Results from Pre-Study Questions.

Participant Evaluation of Entertainment

The workshop received positive marks for being entertaining. (See Figure 10.)

Post-study Question: "I found the experience of this study (concept mapping and play readings) to be:"

Number of Participants

15
10
5
0

| Very Not Entertaining | Somewhat not entertaining | Neutral | Somewhat entertaining | Very Entertaining |

0   0   0   13   4
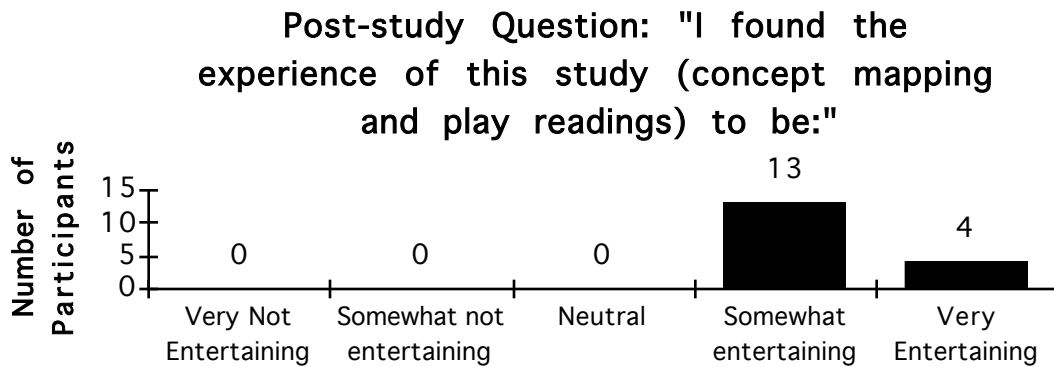
Figure 10. Entertainment Value of the Workshops.

Participant Evaluation of Change in Understanding

However, the workshop received good, yet more neutral marks regarding improving understanding of the portal concept: environmental racism. (See Figure 11.)

Post-Study Question: "My understanding of environmental racism:"
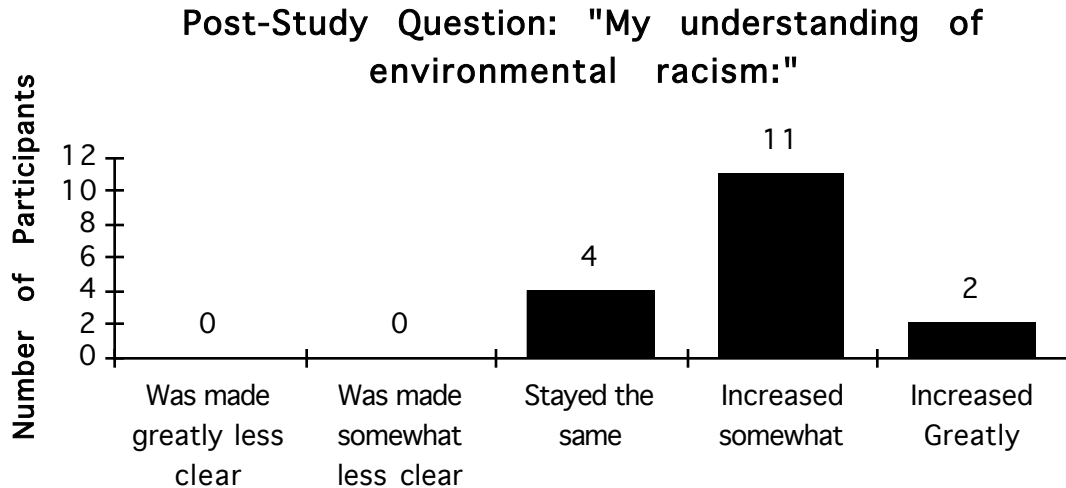
F

igure 11. Change in Participants' Understanding of Environmental Racism.

The workshop achieved its goal of being entertaining, but did not do as well regarding its goal of improving participants' understanding of environmental racism. I believe this resulted from two factors. First, I purposely avoided lecturing on the subject, either before the study when I was recruiting participants or during the workshop. I wanted to make sure that the concept maps reflected the participants' own understanding, not what I had told them repeated uncritically back at me. Second, the play I was using, <u>Dumping Ground</u>, relates to environmental racism in its economic dimension, but not in its race dimension. Therefore, it would be accurate to say that the elements of the workshop were loosely coupled, in the sense that the portal concept or

thrust of the concept map and the thrust of the play were related but not exactly the same. If I had used Dilemma of a Ghost, the workshop might have been more tightly coupled (i.e. the portal concept and the thrust of the play would be more closely related), but Dilemma of a Ghost represents an expansion from the conventional idea of environmental racism: non-{black versus white} race based discrimination with environmental sources of conflict, instead of discriminatory siting of toxic waste facilities. If I could find a play which discusses environmental racism in the conventional sense, that would probably improve the workshop. This does not mean that the workshop as it currently stands does not work. I just need to find a new way to talk about it. One way might be to talk about the workshop as an exploration of environmental issues, rather than an exploration of environmental justice. I would then ask people to concept map their understanding of environmental issues. This should make future workshops more tightly coupled.

Participants' Future Interest in Environmental Justice

This next question was intended to measure the workshop's ability to motivate interest in the portal concept. (See Figure 12.)

Post-study question: "Do you plan on pursuing the topic of environmental racism further?"
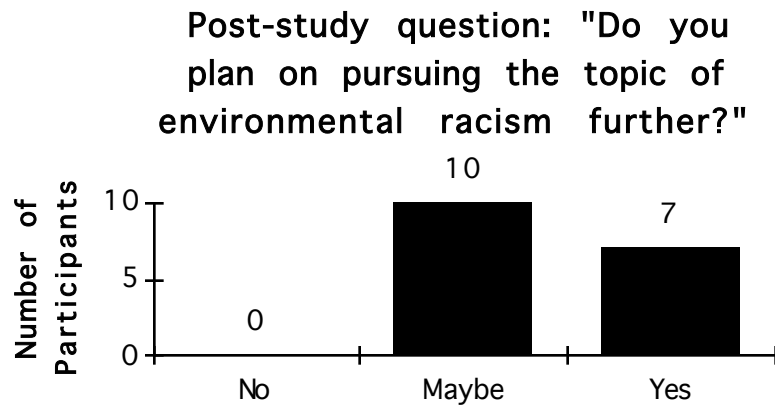
Figure 12. Participants' Plans to Pursue Environmental Racism Further.

The participants by and large think they will pursue the subject of environmental racism further. However, it is difficult to separate the effects of the workshop from intentions people may have had before the workshop (a self selection problem).

Future Participation

Perhaps the strongest indication of whether the participants found the workshop to be of value is whether they would like to participate again. A majority of the participants indicated that they would like to participate in future workshops. (See Figure 13.)

Post-study question: "Would you like to participate in future studies similar to this one?"
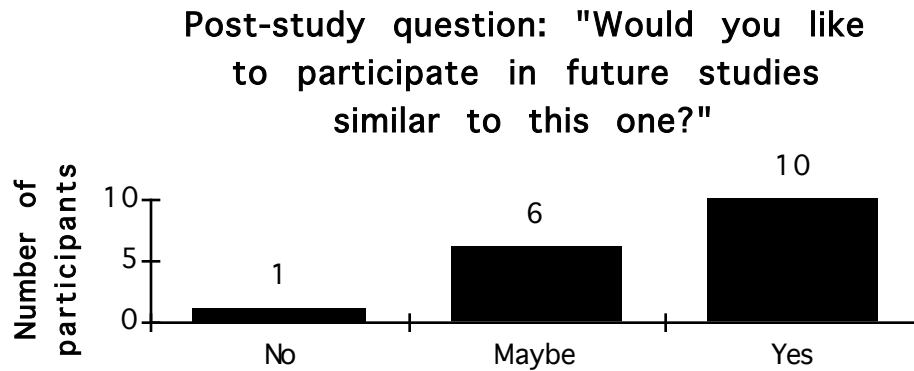
Figure 13. Participants' Interest in Participating in Future Studies.

Contingent Valuation

The following questions are part of the Contingent Valuation portion of this study.

The Contingent Valuation portion of the study revealed that most participants thought the workshop was worth more than a loaf of bread (an object of sustenance), and more than a movie (an object of entertainment). (See Figure 14.)

Post-study question: "Was this experience worth more, the same, or less than the following:"
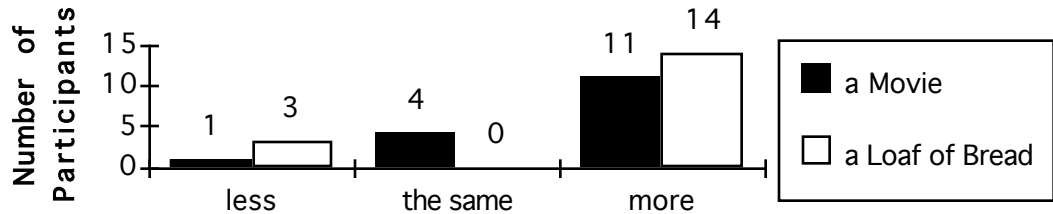
F

igure 14. Closed-ended, Commodity-comparison Contingent Valuation of the Workshops.

The participants' willingness to pay (WTP) expressed directly in dollars had a mode of $5, with outliers at $0 and $2, and $20 and $100. A histogram of the direct dollar WTP is shown in Figure 15. Two people expressed a variable WTP of $5-10, included in Figure 15 as $7.50. One person expressed a variable WTP without specifying an amount. Several people responded with "I don't know what I would be willing to pay." The $2 response included a comment in the margin explaining her response by saying that she was just a cash poor student. Given this comment, and the fact that in Ithaca, NY movies almost always cost more than $5, the direct dollar WTP likely underestimates the participants' actual feelings about the worth of the workshop. This result is in contrast to other studies where the contingent valuation seemed to overestimate the 'true' WTP (such as Harrison 1992).

Direct Dollar Contingent Valuation Results
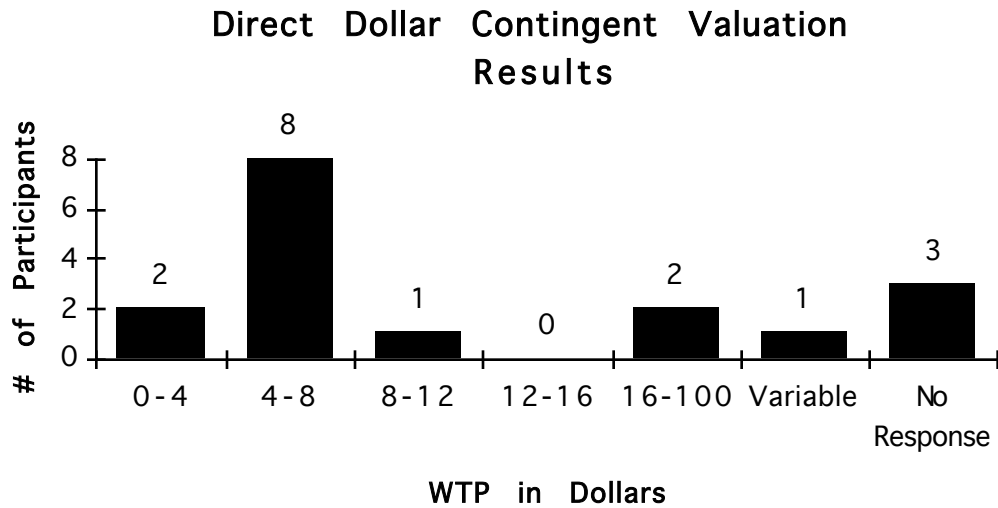
Figure 15. Direct Dollar Contingent Valuation Results

As I mentioned in the literature review of Contingent Valuation, I was not able to find references indicating how to adjust a person's stated WTP where the person is receiving compensation for participation in the study. While participants did not receive compensation in this study, some participants did receive class credit. These participants were taking an introductory psychology class in which they were required to participate in 6 hours of experiments. They could choose from a variety of studies to fulfill this requirement. Participating in this study fulfilled 2 of the 6 hours. Most of the other studies which they could choose from lasted 1/2 hour. Theoretically, one could calculate the value of the credit by determining what percentage of their grade the participation was worth, and multiplying this percentage times the amount they paid in tuition for the psychology course. Such a number would be problematic. For instance, should percentages of the course which are graded be given more weight than those which are ungraded, and if so, by how

much? Upon reflection, it would be worth asking participants in future studies whether their WTP would be different if they were not receiving such non-monetary benefits.

As the number of participants increased, I began to notice a strange result. As of 7-23-1994, there were 3 participants who rated the workshop as worth more than a movie, but worth less than a loaf of bread. If one reduces the commodities to likely Ithaca dollar values, a movie is worth about $6 and a loaf of bread is worth about $2. This might indicate that these participants are poor judges of value, however, I feel there is a more likely, and more profound, possibility. I suspect that people perceive the worth (i.e. the relative importance) of a commodity differently from their willingness to pay for that commodity (i.e. their perception of what would be a reasonable cost for that commodity). Thus, a loaf of bread may be more important than a movie, even though it usually costs less than a movie. Or to put it another way, if you were to be stranded on a desert island, which would you rather have with you, a movie or a loaf of bread? It might be worthwhile to conduct a Contingent Valuation study where participants are asked to express their WTP under a variety of circumstances. For instance, 'What is your WTP for ____ at your present income?, at the income you expect to have in 5 years?, if stranded on a desert island?, if you lived in a city under siege such as Sarajevo?'

Based on this observation, I have two suggestions for future Contingent Valuation studies. First, when asking direct dollar CV questions, the researcher should ask both 'What would you be willing to pay for ____?' and 'What do you think ____ is worth?' Second, there is a need for a CV study using commodity comparison questions where the researcher asks the participants to

describe their decision making processes. Such a study might use a method similar to the Schkade & Payne study of direct dollar CV questions (Schkade & Payne 1994).

Participants also thought the workshop was worth less than a good book, the same as a good book, less than a backrub, more than laundry, the same as a class at Cornell, less than a required class on this subject, less than an environmental conference, more than TV, the same as radio, the same as a dramatic play, less than marshmallows, the same as a class, more than ice cream, more than watching TV or playing video games, the same as a talk with a friend, more than playing ping pong, and more than candy. The results from this pick-your-own-commodity contingent valuation question are interesting to see to what kinds of products or services participants chose to compare the workshop. If a study were to go further into depth investigating people's decision making processes and how they value things, such results could serve as the starting point for an interview question. Also, should this study continue, and if there is a type of commodity participants have been frequently comparing the workshop to, such a commodity might be added as a standard CV question.

Analysis of the Concept Maps

Many participants, regardless of how they rated their understanding of environmental racism in the pre-study questionnaire, were able to construct a concept map correctly describing one or more aspects of environmental justice/racism. A number of participants who felt that they had no idea what

'environmental racism' was constructed a concept map of 'racism'. Especially in the last workshop, I was able to draw upon ideas in these maps to create a link to environmental racism. As such, the maps might have not been useful for measuring conceptual change, but they were a useful contribution to the creation of a reflective educational space within the workshop. Such a use is also consistent with what Zietsman describes as "anchoring situations": "student intuitions that are compatible with accepted physical[28] theory; the idea is that one grounds instruction in such elemental, primitive physical intuitions - thus building instruction on what is intuitive to the student." (Zietsman 1993, p. 14)

All of the maps which I feel express a complex set of ideas about environmental racism, and which are constructed in a clear manner, were drawn by participants who rated their understanding of environmental racism as "good".

I have reprinted four of the concept maps which I feel are the most clearly constructed and thus might help others grasp the idea of environmental justice/racism.[29] Hopefully the reader will find them as thought provoking, and conversation stimulating as I do. I also feel that it is important to reprint some of the concept maps because part of the purpose of the workshops and

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[28] Zietsman & Clement were studying instruction about levers. Presumably "physical theory" could be replaced with other kinds of theory and still maintain a coherent model.

[29] The concept maps were scanned using line art settings. This type of setting keeps the maps reasonably legible, but sacrifices the sense of concepts being in boxes. Grayscale settings preserve this sense of boxes on the screen, but do not print well. It is also possible to transcribe hand drawn concept maps into a computer generated format, such as the sample map in Figure 3, but some of the personality of the concept maker would be lost in the process.

this research project as a whole has been to let participants speak for themselves. (See Figures 16-19.)
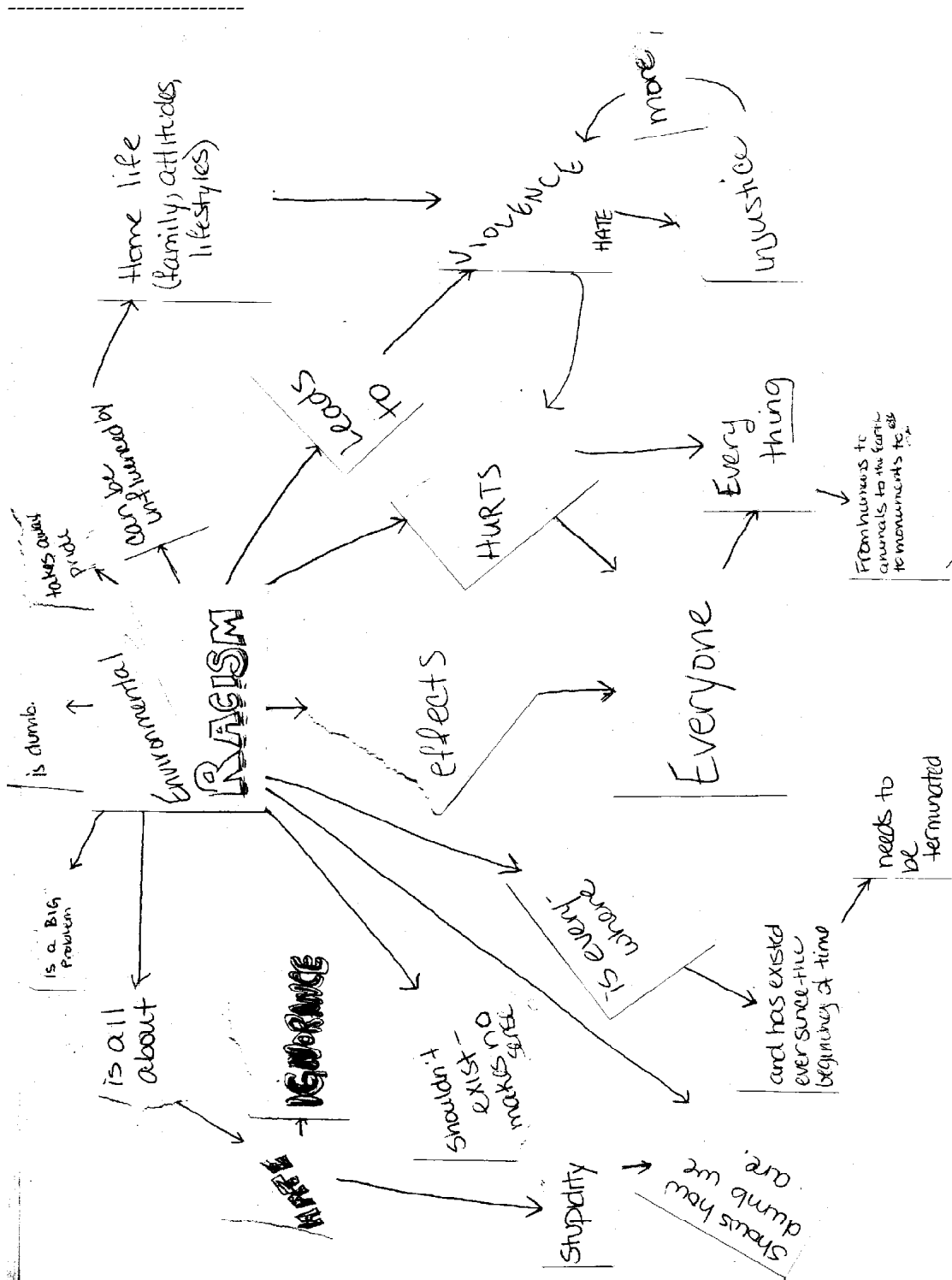
Figure 16. Participant P16's Concept Map.
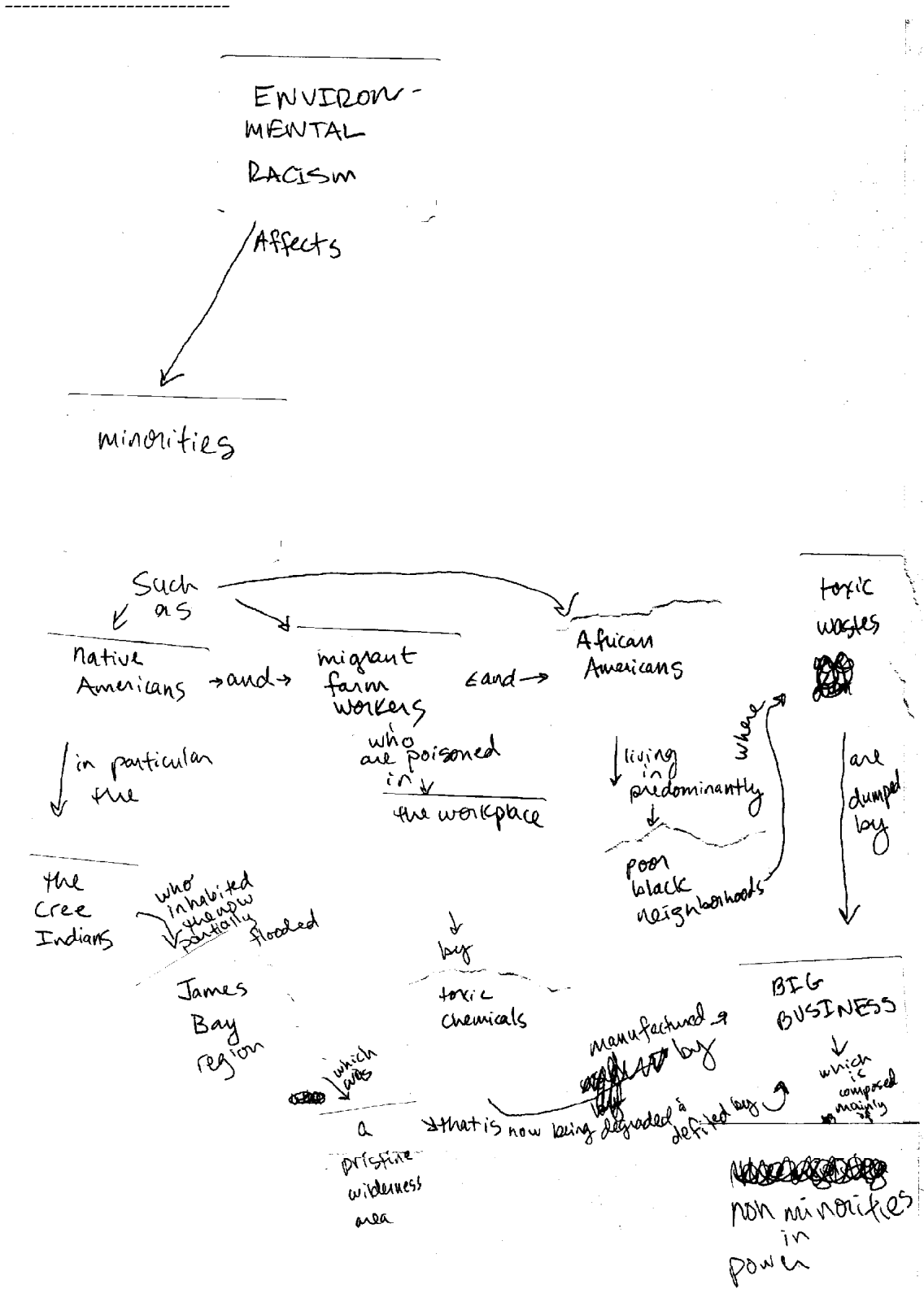
Figure 17. Participant P11's Concept Map.
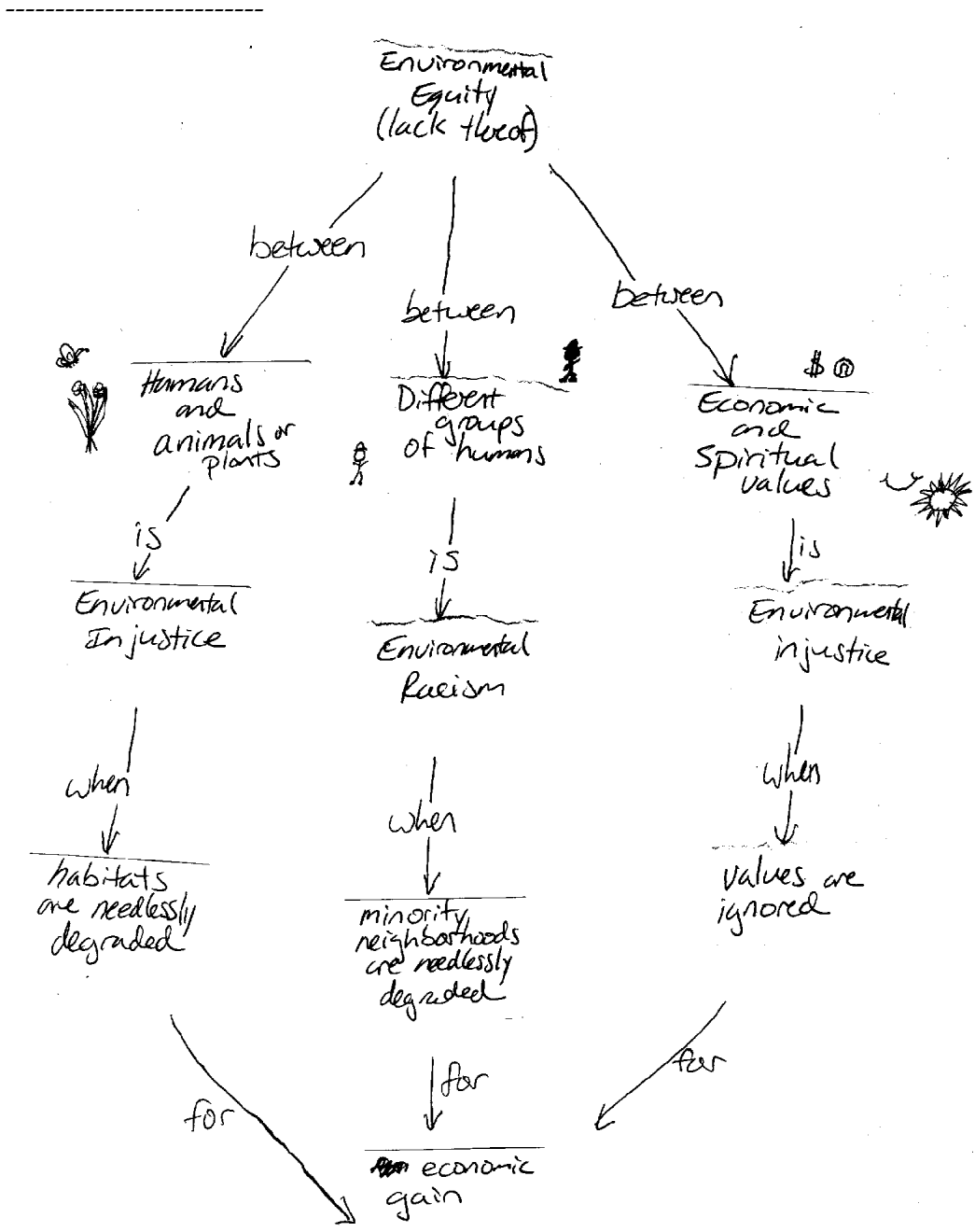
Figure 18. Participant P6's Concept Map.
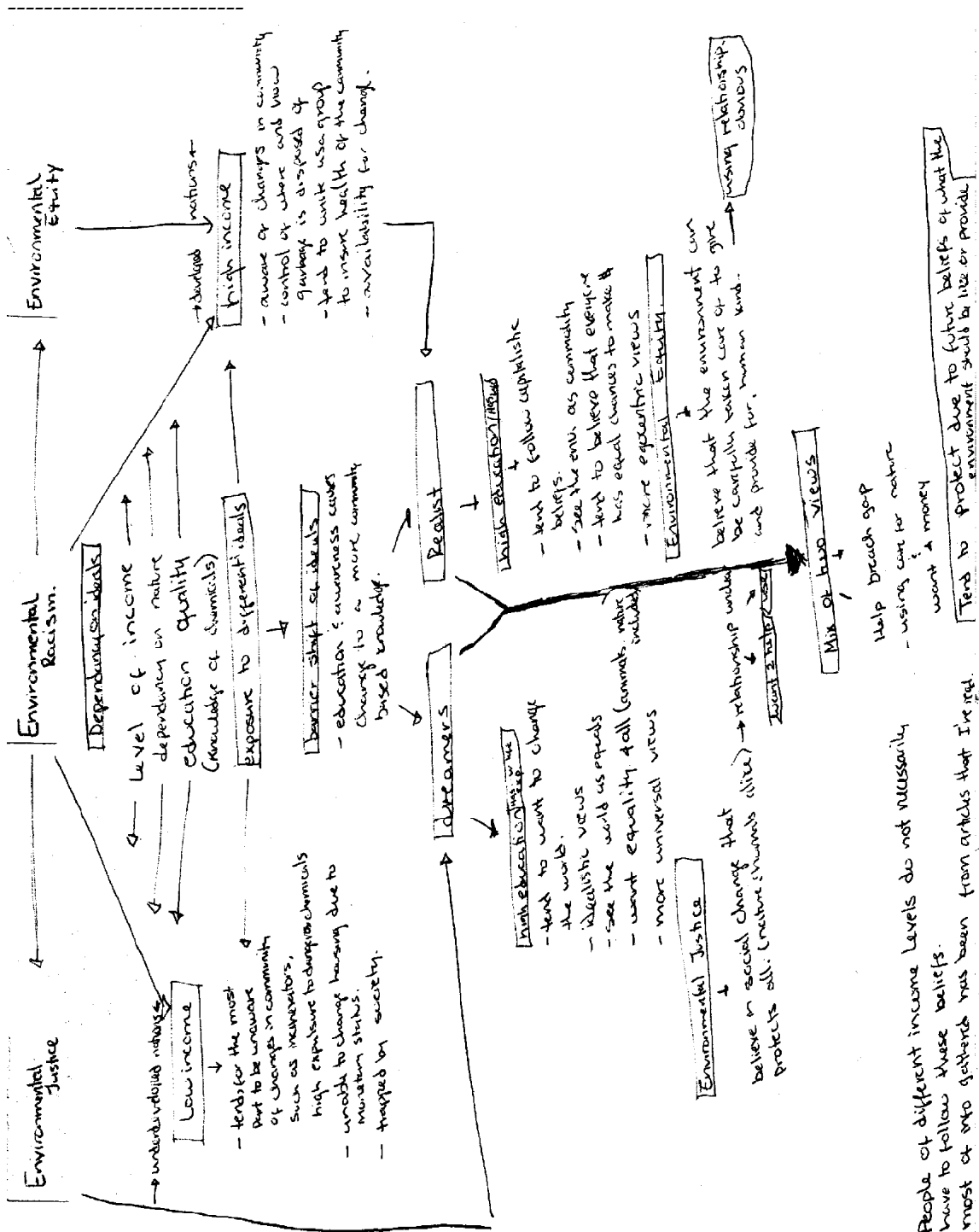
Figure 19. Participant P17's Concept Map.

Content Analysis of the Concept Maps/What I have Learned from the

    Concept Maps

Now that the reader has had a chance to consider the concept maps above (Figures 16-19) without being directed by my own interpretations, I will offer a few observations.

Environmental racism, in contrast to the other two aspects of the construct, tends to be associated with minority communities. P6 wrote [Environmental Equity (lack thereof)] - between -> [Different groups of humans] - is -> [Environmental Racism] - when -> [minority neighborhoods are needlessly degraded]. P11 wrote [Environmental Racism] - affects -> [minorities]. P3 wrote [Low income & Communities of Color] - alerted or discover problem -> [Long Time Period] - likely don't take action -> [Lack protest coordination; Lack $$ to sue; Lack $$ to move] - represent -> [Environmental Racism]. P8 wrote [People being unfairly exposed to env. hazards] - b/c of -> [their race or culture] - known as -> [environmental racism].

Participants organized the three aspects of the construct differently. P3 made a distinction between Environmental Equity and Environmental Racism, each of which could lead to Environmental Justice. This distinction is based primarily on the degree of economic support: where groups have sufficient economic support to respond to adverse effects, the situation would be characterized as Environmental Equity, while if groups lack such economic support, the situation would be characterized as Environmental Racism. P17 made a distinction similar to P3's. However, P17 used Environmental Racism as the central concept, and then created a continuum from Environmental Justice (low income) to Environmental Equity (high income). P6 described a

very different relationship between the three aspects of the Environmental Justice/Racism/Equity construct. P6 used Environmental Equity as the starting concept, and then made a distinction between Environmental Injustice and Environmental Racism, with Environmental Injustice relating to the needless degradation of habitats and values, while Environmental Racism related to the needless degradation of minority neighborhoods.

Environmental problems are often thought of in technical terms. However, Environmental Racism can not be solved through technical means alone. Two maps show a link between Environmental Racism and affect. P21 wrote [Environmental Racism] - education -> [Understanding Compassion] - empathy -> [Patience] -> [Justice]. P16 draws a connection between Environmental Racism and Hate by way of Ignorance and by way of Violence.

Having reviewed the concept maps, one way to summarize Environmental Injustice would be to say that people can become trapped by society - by poverty, by their inability to move, by lack of information or education, by other people's patterns of consumption, and even by their own patterns of consumption (See Dilemma of a Ghost for more on this last point). Once they are trapped, people are more likely to be unfairly exposed to a variety of environmental hazards. Some of this exposure may have been visited on them purposefully, but this exposure can have been created unwittingly. Finally, solutions to Environmental Injustice may be difficult to come by because such dilemmas must be dealt with on a social/affective level, as well as on a technical level. Yet this difficulty also provides a potential key to the solution: some in the community may be able to provide leadership in technical areas, while others may be able to provide leadership in social areas, and each can improve

their understanding of the domain in which they are weak by learning from the other.

Demographic Analysis of the Concept Maps

There were 8 concept maps drawn by participants in high school, and 12 concept maps drawn by participants either in college, or recently graduated from college. There is no readily apparent difference between these two groups of concept maps. Seven high school maps used linking words, while one concept map did not (a measure of the clarity of the concept maps). This is similar to the college concept maps where ten maps used linking words, and two did not. The average number of concepts in the high school maps (a measure of the complexity of the concept maps) was 13.5. The average number of concepts for the college maps was 13.8. There was a greater amount of variability in the college maps: the standard deviation was 6.5 for the college maps compared to 3.1 for the high school maps.

I should point out that counting concepts can be problematic because not everyone used the same style of concept mapping. For instance, P17's map has anywhere from 17 to 46 concepts depending on how you count the bullets below the main concepts (I split the difference on this map and decided to call it 26). Also, given that the high school students represented in my sample were taking a college course, the difference in intellectual and other kinds of ability between the high school and college students in the sample was most likely not as great as it would have been had I conducted workshops in the high schools which the participants attend.

Anchor Analysis of Concept Maps

If the study had continued, or if I had taught a longer equivalent of this study as a semester long course, I could have used the concept maps to find anchoring situations which the students could build upon. I will demonstrate this process for several maps, some of which deal with environmental racism/justice, and some of which do not.

I will start with the map (Figure 20) of participant P23. This map put "Racism" at the top. One sequence consisted of [Racism] -> respect -> [Equality]. Certainly, if one treats other people with respect, people are more likely to be able to interact with each other as equals, and if people can interact as equals, exchanges are more likely to be fair and just. This concept chain relates directly to the classic case of environmental racism: the citing of toxic or hazardous waste facilities. A company comes to a community and says, 'We would like to build this hazardous waste facility in your community. It will be safe and it will provide the community with good jobs.' How is the community supposed to know if they are telling the truth? The company can certainly go and hire experts to argue their case, but if the community is poor or poorly organized, will they be able to afford a second opinion? Supposing that they do accept the facility, and several years later people start to get disproportionately sick. Will the community be able to take the company to court to get compensation? For a community like the one in Dumping Ground, the answer is probably no.

But how do you create respect? Environmental Equity can provide one answer. The participant wrote [intolerance] -> keep apart - distance -> [segregation], and [intolerance] -> fear -> [violence]. Respect is a wonderful goal, but the distance created by history, residential patterns, food choices and other differences, and the barriers created by fear are serious obstacles to respect. One way to overcome these barriers is to have people of different backgrounds work together on a common project. A project that could be potentially used for this purpose is the Global Rivers Environmental Education Network (usually called GREEN for short). GREEN (Mitchell & Stapp 1992) has classes from several school systems along a river or other water system learn how to collect and measure water for water quality studies. The students exchange their data and discuss their findings. In addition to the benefit of working together and seeing that the people from other schools are real people and not stereotypes, this kind of project has a benefit that derives from its environmental nature. Clean water is important for health. This aspect of the environment is independent of the color of one's skin. This is an example of environmental equity in the sense that both groups together take ownership and responsibility for a common resource.

Since I contend that anyone can learn successfully, it should be possible to find a path from an anchor to the portal from any concept map. One participant created a concept map with "Ground" at the top (Figure 21). The map describes the characteristics of ground, such as [Ground] -> made up of -> [Soil] -> has -> [Minerals] -> deep in ground -> [Crust of Earth] -> earth -> [Scientists study]. At first glance this has nothing to do with environmental justice. However, minerals can be valuable, so valuable that companies will come in and strip away the viable ecosystems on top of them. Native peoples

have been displaced by the same process that destroys the ecosystems. In some cases they have simply been pushed off of their land, and onto poorer land. Ironically, in some cases more recently, the agriculturally poorer land onto which they had been pushed contains uranium, a valuable commodity. Native Americans are employed to mine this (so they theoretically are getting compensated for their wealth), but the same problems exist as in the hazardous waste scenario described above. Are they getting paid enough to offset the potential health hazards of mining uranium?

There is at least one more anchor in this map: [Scientists study] -> earth. Who are the scientists? Are there people in the affected communities who can study such issues as whether uranium mining is harming Native American workers? Is the educational system such that new scientists with a sense of ethical responsibility to the people and the land can be created? Can the results of scientific studies be understood by the people in the affected communities?

In addition to anchoring instruction on the content of the concept maps, it is also possible to anchor instruction on the form of the concept maps. Some maps appear to have a solid idea regarding the content, but since there are no linking words, it is difficult to determine what the author of the map intended. For instance, a map (Figure 22) starting with "Environmental Equity" at the top, contained two branches starting with [Environmental Equity] -> [Habitat] and [Environmental Equity] -> [Quality of Life]. Without linking words it is hard to tell whether the author means that quality habitat (for other species) and quality of life (for humans) are both necessary to achieve environmental equity, or whether these two objectives are in conflict, requiring that these goals be balanced in the attempt to achieve environmental equity? I am open

to a wide variety of forms for concept maps, and I strongly support the McAdams non-rule that a concept map is done when it is time to go to dinner[30] (McAdams 1992), but I do feel that concept maps with linking words are almost always clearer than those without linking words.

If a concept map is on the mark regarding content, and is clearly constructed with linking words, there is always the opportunity to expand the map, usually in several directions. For instance, one participant drew a map (Figure 23) with this sequence: [Environmental Justice] -> is -> [People being unfairly exposed to env. hazards] -> b/c of -> [Their race or culture] -> known as -> [Environmental racism] -> ex. -> [James Bay]. One way to expand this map would be to put James Bay at the top of the map and describe what specific aspects of this issue make it an example of environmental racism. Another route would be to examine what makes race or culture a target of unfair practices.

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[30] This is a non-rule in the sense that the author can decide when to stop working on the map and go to dinner. There is no external force that will say 'Now you can go to dinner, but before that you can not.'

RACISM

HATRED

LACK OF
INTEREST

RESPECT

INTOLERANCE

TOLERANCE

EQUALITY

KEPT APART-
DISTANCE

FEAR

SEPARATION

UNDERSTANDING
FRIENDSHIP

STRONG TIES

SEGREGATION   VIOLENCE

NO
UNDERSTANDING

SEPARATION

DESTRUCTION

NO COMMUNICATION

POOR
RELATIONSHIP

NO HATRED OR
FEAR

NO RELATIONS

EXTINCTION   MISTRUST

LACK OF
COMMUNITY

LITTLE
VIOLENCE

NO COMMUNICATION,
NO CONTACT
RELATIONSHIP GONE

CLOSE COMMUN.
WORK TOGETHER

PROSPERITY

Figure 20. Participant P23's Concept Map.

Concept Map

grass — Ground — grass

walk on

Scientists ~~use~~

made up of — Soil

made up of

dirt — brown

~~ants live~~ ants live
~~ants live in~~ in

| has

Minerals — rocks

ants get food
on ground

People step
on ants

| deep in ground

Crust — 3 layers
of earth

People need
Oxygen

airplanes — scientists ride in — earth

Scientists
study

from

Air
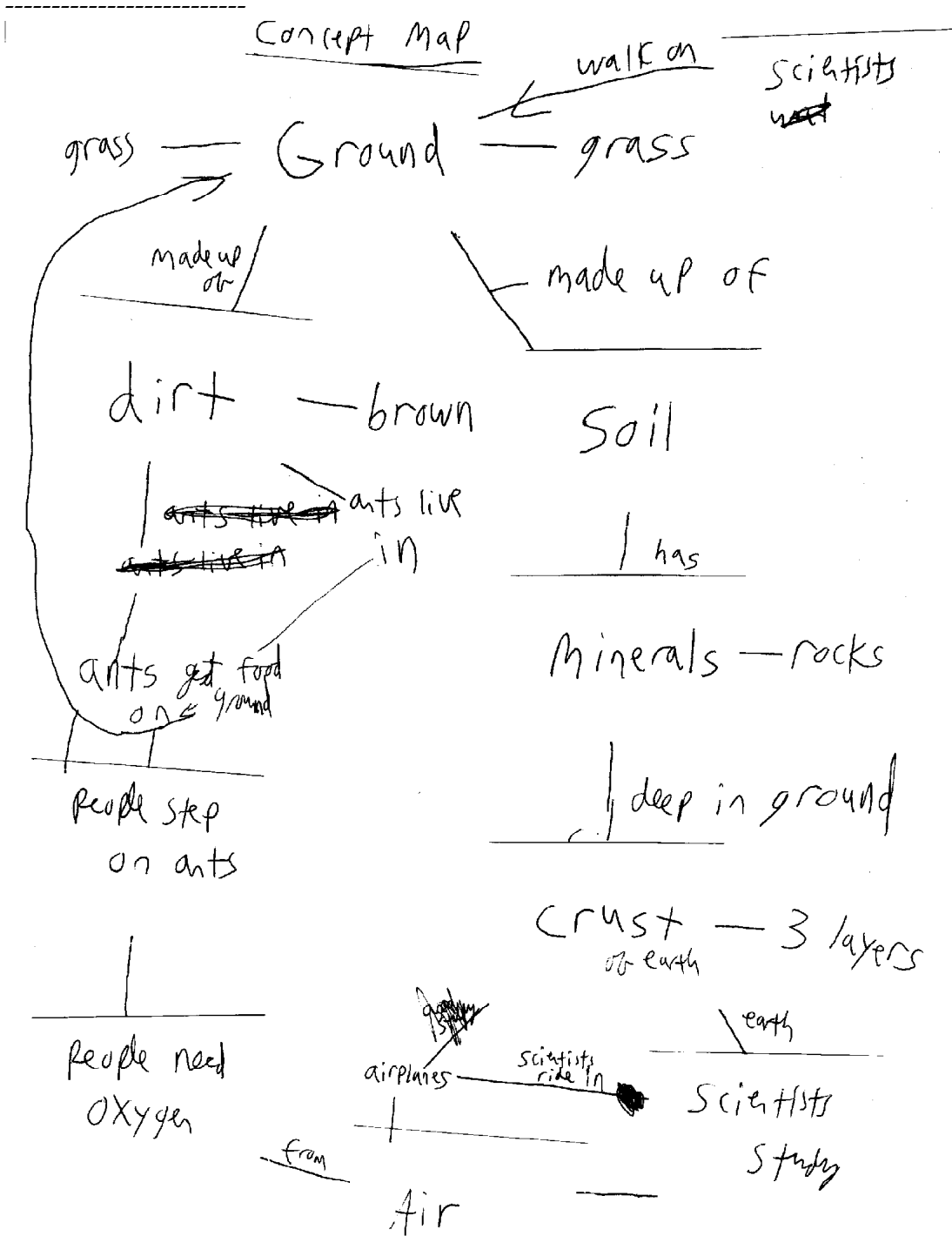
Figure 21. Participant P25's Concept Map.
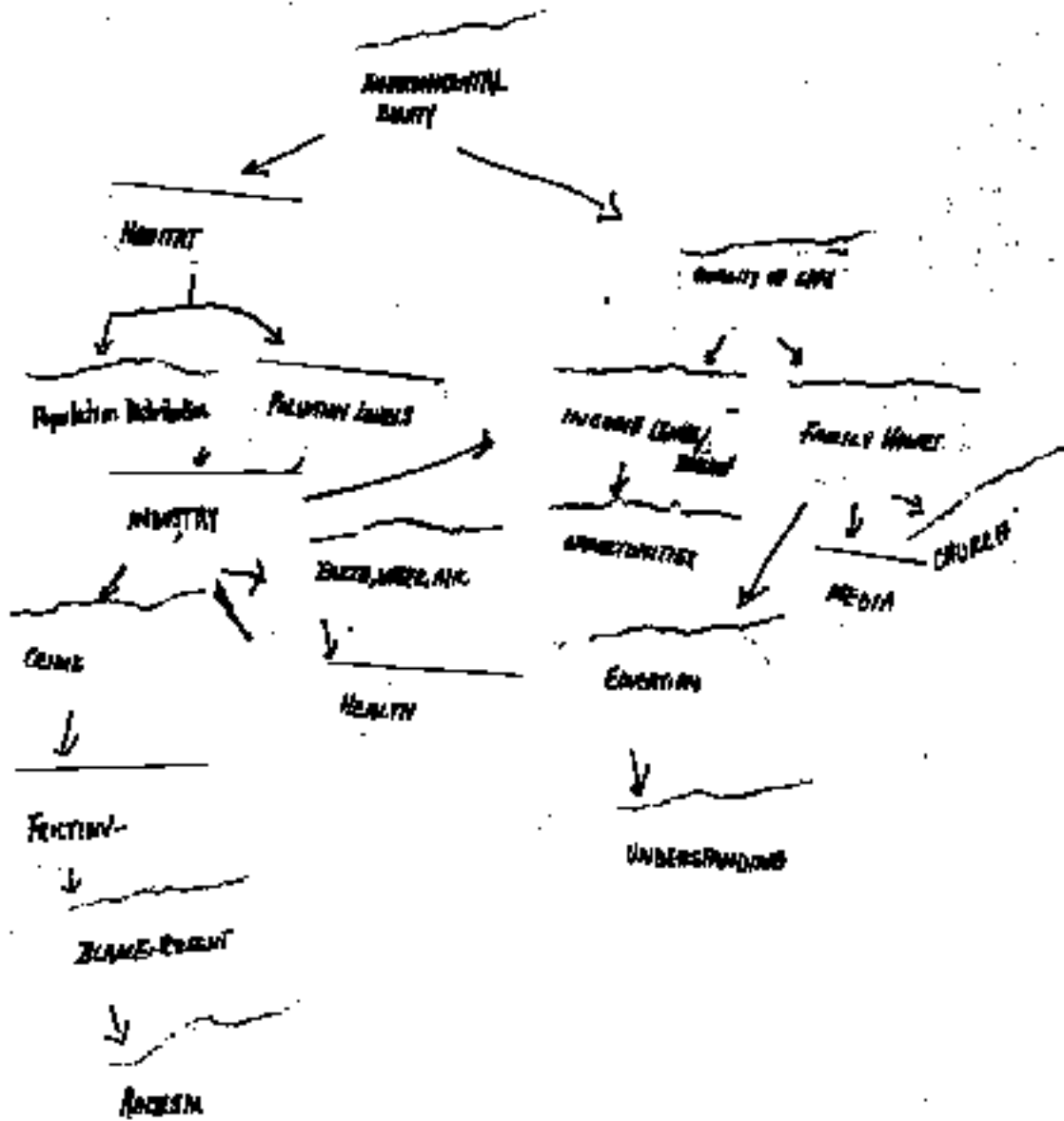
Figure 22. Participant P13's Concept Map.

Figure 23. Participant P8's Concept Map.
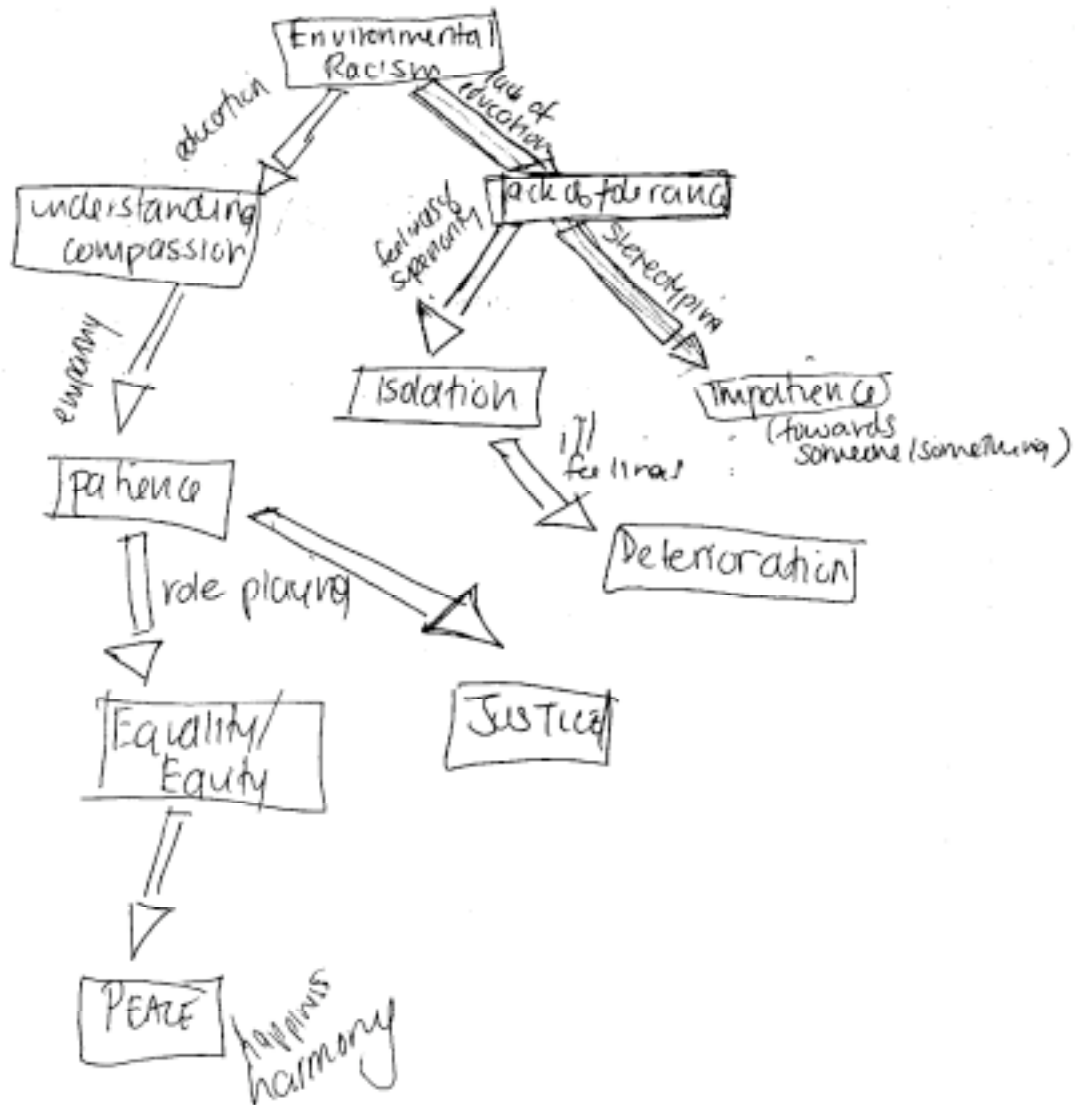
Figure 24. Participant P21's Concept Map

A Report on the Discussion Phase of the Workshops

Early in the first group workshop, I realized that I needed to make a decision as to whether the discussion was intended as a focus group or an open discussion. I opted for the discussion mode.

The discussion consisted of discussion of the issue of environmental justice, group literary criticism of the merits of the play; and ideas for how the participants might want to use this play, other existing plays, or hypothetical new plays for educational purposes.

Discussion of environmental justice often touched upon people's personal experiences. For instance, a participant from Montana talked about the plight of Native Americans out west, and another participant talked about people in her home town who were affected by a landfill across the street from their homes. The discussion of environmental justice also touched upon the play. For instance, people in two groups commented on Clayton's plight. His wife was poisoned and killed by the chemicals in her workplace. Clayton "has rights but he can't use them". "He couldn't sue the company because he has no money". "Companies shouldn't dump just because someone needs money or is rural and does not have enough political weight."

Participants thought that there was a "problem with the ending : the play went from life-and-death to trivial." Other comments about the ending included "It is hard to wrap up a topic like this in one act." "The play was kind of like writing stories, 'I have enough pages; I need an end.'" Some participants didn't like the ending, and thought the author should have offered some solutions. Others thought that "the author didn't want to make it seem like the problem is fixed; there is hope but nothing is corrected."

Participants also thought the play had style problems. "The play seemed to have stereotyped characters." "The dirty talk didn't have a point."

Some participants had questions about substantive issues in the play. For instance, one participant thought that it was unclear regarding whose property the chemicals were dumped on. It was also unclear whether or not Lloyd, the truck driver, really knew what he was transporting.

One participant suggested doing the play in a town with a related problem, and have the audience leave with leaflets suggesting how they could become involved. Two groups suggested using a performance style similar to the Cornell Interactive Theatre. This style consists of a 10 minute performance. The audience can then ask questions to the actors, who answer the questions in character. One participant thought that "play is enlightening but really long, longer than is necessary for what the Cornell Greens would want to do." This person thought that the Greens should create a new short piece for use with their dorm based educational programs.

In the last workshop, I added a question to the post-study questionnaire, "If you have suggestions which would improve future workshops please write them down below." I continued the discussion after the participants finished this questionnaire. This made the ending feel more participatory to me, and gave participants a chance to verbalize their response to the workshop in addition to writing their response down. By analogy, the difference is like having actors come on stage for a curtain call after a performance, as opposed to not doing a curtain call and having the audience fill out a survey to indicate whether they liked the play or not.

Responses to this question included a range of responses. One participant suggested other media which could convey content about the portal concept,

such as showing a "movie or video program on the subject, [or having] actual actors acting out part of the play."

Another participant suggested that a different type of play would improve the workshops: the workshops should use "a play that takes more of a stand." A more tightly coupled workshop would be more likely to use such a play.

Participants also suggested other ways that participants could reflect on the topic and express their ideas, such as "writing an essay along with the concept map."

Then there was the comment that while not providing concrete suggestions, is important because it makes the researcher feel like all of the work of the study was worthwhile: "I had a lot of fun doing this study and cannot think of anything I would do to alter it." During the post- post-study questionnaire discussion, the person who wrote the above comment asked "Does the play relate [to environmental racism/justice] because the characters couldn't afford to do anything else?" The answer of course is 'yes', but what was reassuring about the question was that it showed that at least one person was able to make a connection to a new idea because of the workshops. I believe that this is a clear instance of conceptual change because this participant's concept map dealt with racism only. While the map might have dealt with racism only because of limited mapping skill, I know this was not the case because the participants who mapped 'racism' did so because they were unclear how to map 'environmental racism', and said so.

Conceptual Change

This study did not end up measuring conceptual change in the way I originally hoped it would. However, if the study was successful as a curriculum design project, participants who said they would be interested in future studies hopefully will participate in future studies. It should then be possible to look for conceptual change by comparing concept maps from multiple studies.

Besides the person mentioned earlier, there is at least one other person who displayed clear conceptual change regarding environmental justice: myself. My understanding of environmental justice is much clearer after having analyzed the participants' concept maps.

Results regarding Computerized Concept Mapping

While computerized concept mapping was only used by the first two participants, observing these concept mapping sessions served as the genesis of a new feature for LifeMap, the concept mapping program I have been developing. This feature allows a user to more easily create multiple concepts at the same time. My suspicion is that this new feature would reduce computer related anxiety in future studies using computerized concept mapping. Of course, this new feature would not have changed the circumstances of the group workshops, since I did not have a way of making a computer available for every participant in the group.

Chapter 6: Summary and Conclusions

This study has shown that the workshop which was developed for this study can result in increased understanding of the portal concept[31] (which in this study was 'Environmental Justice/Racism/Equity'), even with loosely coupled elements. What the study was not able to show was how, in detail, a participant's conceptions change as a result of the workshop. In order to achieve this more ambitious objective, I would have to add an additional component to the design. This would likely consist of an individual session where I would have the participant construct a second concept map on the portal concept, and would interview her about her experience with the workshop.

This study has shown that the workshop is worth developing further. The study received positive marks for being entertaining. This is an important result both for its own sake, and because it is consistent with the view that education is most effective when it is fun and tangible (Bushlow 1994). Furthermore, a majority of participants indicated that they would like to participate in future studies similar to the one they participated in.

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[31] Please see the table of contents for a definition of 'portal concept'.

I would also argue that the Contingent Valuation portion of this study provides evidence that the workshop is worth developing further. Participants were asked to compare the worth of the workshop to a common object of entertainment (a movie) and a common object of sustenance (a loaf of bread). A majority of participants indicated that they thought the workshop was worth more than either object.

One of the important long term objectives of my work has been to find ways that the Theatre of the Environment can be made more widely known, which should in turn provide the authors of this theatre, and other theatre practitioners who similarly feel that environmental issues are important, with improved support. In conclusion, I would like to sketch my thoughts on what the ideal workshop might look like to best meet this objective.

An Ideal Workshop Design

The workshop would look essentially the same as the workshop used in this study, with several exceptions. The portal concept and the play should be more tightly coupled. In addition to the person playing the role of researcher, there should be a person playing the role of convener, and a person playing the role of discussant. The convener and the discussant could be the same person. The convener would be responsible for gathering people together to participate in the workshop. The discussant would be a person with expertise related to the portal concept. This person would help facilitate the discussion by adding subject matter content where appropriate, answering participants' questions, and would also be responsible for the other standard facilitation

tasks, such as making sure that everyone who wants to speak gets a chance to speak. This would free the researcher from having to worry about whether to try and answer participants' questions or provide content and thereby risk contaminating the participants' responses, or to not answer questions and thereby risk participants feeling a reduced sense of worth for the workshop. The discussant would also provide a balance of verse and prose without having to require that the participants read several articles before or during the workshop. Moreover, the discussant would create a social dimension for the content which readings alone could not provide.

This design would result in five sources of expense: researcher, convener, discussant, author, and operations.

If we assume a standard pay rate of $10 per hour, a 3 hour workshop (2 hours for the workshop, plus 1 hour of prep), and we assume that the convener is paid for 3 hours total, this yields $90 of labour expenses per workshop. I will round personnel expenses up to $100 to account for payroll taxes and the like.

In this scenario, the workshops are likely to be advertised and admission would be charged. This changes the character of the play reading from a clearly private reading to something fairly close to a public reading. As a result, the author of the play would need to receive some compensation. For the moment, assume that a 'normal' public reading would have an audience of 50, and that the average royalty per reading is $50, so I would budget $1 per participant.

Operations is perhaps the most difficult area to estimate since the workshops have no financial history, especially over multi-year periods. Keeping that in mind, assume the purchase of 1 play per workshop at $5, supplies (such as post it notes, paper, and pens) at $5, publicity at $20, and a budget reserve of $20, for a total of $50 per workshop. Also assume that a space does not have to be rented for the workshop.

This results in a total of $150 per workshop, plus royalties. If participants are charged $15 (about the same as for a show in Ithaca[32]), each workshop would need 10 participants to break even. If one were to charge the mode of the open-ended contingent valuation question ($5), each workshop would need 30 participants.

Ten participants per workshop is probably feasible. Thirty is probably not. Feasibility in this case refers to the degree to which participants could take a part in the play reading.

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[32] The full spread of ticket prices at the Hangar Theatre in 1994, not counting $6 student rush seats, and $0 comps, was $10 to $22 per ticket. A more relevant number for these purposes might be the average price paid per ticket, including comps. The average price paid per ticket for the entire 1993 Hangar season was $11.31. (Hangar 1994) This also represents the actual valuation for this type of entertainment in Ithaca, considered in the aggregate. A more detailed distribution of prices paid was not available.

Two Alternate Workshop Designs

If I were willing to abandon the desire to obtain an initial picture of environmental justice/racism which is completely uninfluenced by myself in my role as researcher (a desire which arose largely from the admirable objective of qualitative research to let participants speak for themselves), I could then start the study by scheduling a short session with participants, either one on one or in groups. In this session I would introduce the participants to concept mapping. I would explain in some detail what we will do during the workshop. I might ask them what their expectations are regarding what they hope to get out of the workshop. I would then give them a homework assignment to a) read an article relating to the portal concept, and b) construct a concept map on that concept. The workshop itself could then start with the play reading, followed by the round of explaining the concept maps, followed by discussion. This would infuse more content into the workshop, and would allow plays longer than 25-30 pages to be used without using more time. It would also allow a portion of the discussion to be run as a focus group so that specific research questions could be answered if necessary. Moreover, this would bring the design and evaluation cycles for the workshops closer to the full tutoring experiment model (Zietsman 1993).

The researcher does not have to present the participants with a specific portal concept. If a workshop were to start with the play reading, followed by the concept mapping (this concept mapping session could be individual, but it would most likely work best if the group were to develop one collective map), the participants could develop a portal concept from the play. The researcher

might ask questions such as, 'How does <u>Dilemma of a Ghost</u> relate to environmental issues?' Once the target group of participants (such as a group of teachers) had derived a portal concept, along with other questions or curriculum materials, a new workshop could be taught based upon this new portal concept.

Some Thoughts on Choice of Play

One of the reasons I chose <u>Dumping Ground</u>, and avoided a play like <u>Meetings</u>, was that I thought that aspects of <u>Meetings</u>, such as its dialect writing style, might be misinterpreted. My thought was that perhaps the participants would think the author wasn't taking the characters seriously. <u>Dumping Ground</u> seemed like an innocuous play by comparison. As it turned out, <u>Dumping Ground</u> has some sexual banter which a number of participants found out of place and unnecessary. This flaw in the play did not seem to prejudice the participants against the workshop as a whole. I believe that these concerns will become far less worrisome if I reframe future studies as participatory evaluations of the plays and of the teaching experiment process in which I have embedded them.

I also chose <u>Dumping Ground</u> for practical reasons. I had limited time for the workshop, so I needed a short play, and I was worried about the logistics of finding a time when large numbers of people would be free to participate, so I wanted a play with a small number of characters.

Thoughts on Collecting Real and Contingent Valuations

Demand for the Hangar Theatre's (Ithaca, NY) Kiddstuff shows, a program which meets my criteria of critical educational theatre, exceeds supply. They meet the criteria because the plays do not talk down to the kids, and are enjoyable for both children and adults, which creates an opportunity for both to discuss their shared experience. During the 1994 season, they have had to turn away large numbers of people, adults and children alike, who wanted to see the shows. For example, in the past the Hangar sold all Kiddstuff tickets at the door immediately before each performance; now people have to buy their tickets in advance to ensure that they will obtain a seat. Increasing supply simply by selling more seats to more performances is a difficult proposition because ticket prices are already subsidized. One option might be to conduct future workshops as a way of raising capital for Kiddstuff. In this scenario, the workshops would still be free, so the researcher could still ask CV questions, but participants would also have the option of expressing a 'real' valuation by making a contribution of their WTP for the workshops to Kiddstuff. This would increase the strength of participants' ties to educational theatre, which would make it easier to support the workshops, Kiddstuff, and related activities.

Future Research Questions

As I stated above, one objective of this study was to identify promising future research questions. This section will describe some of the promising questions I have found.

How well do participants understand the idea of informed consent itself? What types of research topics should be considered as private speech versus public speech, and would such a difference in orientation significantly affect research results?

Why do people choose to participate in research projects such as this one? Is there a gender difference in these reasons?

Of the participants who said that their understanding of environmental racism increased, were these mostly people who rated their understanding as none or minimal at the start of the study, or all levels?

If I were to do this study again, in addition to asking 'Do you plan on pursuing the topic of environmental racism further?', I would also ask 'Did you plan on pursuing the topic of environmental racism before you heard about this study?'

One might ask participants to consider how their concept maps, and hence their understanding of the portal concept, is or could be situated in their everyday experience.

There were enough responses to the pick your own commodity, closed-ended CV question where the participant picked a class of some kind, that I would add a class question to the bread and movie questions. I would also add a live theatre performance question. This would give a fuller range of comparisons: sustenance (bread), common entertainment (movie), not as common but close analog to the workshops entertainment (live theatre), and one class session (a learning situation equivalent in length to the workshops). By asking this fuller range of commodity comparison CV questions, I could

both interview participants to describe their decision making processes, as well as using these questions as a lead-in to questions about what the workshops meant to them. The general question would be something along the lines of 'How is meaning linked to value?'

I would be especially interested in discussing such questions with the participants who expressed contradictory contingent valuations. I suspect they would have important insights which would help improve the Contingent Valuation technique.

Would the results from similar workshops be better on either entertainment or understanding if the elements of the workshop were more tightly coupled?

Describe how your conceptions of (and motivations toward) the portal concept changed as a result of this workshop.

Since one of the objectives of this type of study is to evaluate the curriculum design, it should be appropriate to involve the participants directly in this evaluation process by stating up front that one of the objectives of the study is to evaluate how this play might relate to the portal concept. In addition, the researcher might ask participants who are interested in adult education to come up with one or two questions along the lines of 'What would you want to know about the interaction of theatre and adult education?'. These questions could then serve as the starting point for a focus group or discussion. The specific questions participants would be asked to generate would depend on their interests. Having a team conduct the workshops, as described above in the ideal workshop design, would facilitate this question gathering process.

For instance, it may be reasonable to assume that theatre practitioners (another group that might participate in the workshops) would be interested in evaluation questions such as 'How can these workshops support the creation of new plays?', but any given group might just as well be interested in adult education. With a convener as part of the research team, it should be possible to fine tune the questions more satisfactorily than one researcher alone could. Furthermore, a convener would do more than leverage the researcher's resources so that more data can be collected. Multiple conveners would increase the diversity of the sample both because different conveners would seek out different kinds of people, but also different conveners would process the participants' potential generative questions through different cognitive filters. The conveners' role as a cognitive filter could be seen as a passive filter (where each convener sees different questions as important because of different experience, and as a result passes along the participants' questions with different imperfections), or as an active filter (where each convener selects participants' questions because each convener is intentionally given an active role in the analysis of the research).

Future Directions for My Work

I feel that it would be useful to continue an investigation of how people understand the relatively new issue of environmental justice. Knowing something about how people understand the term should help researchers and activists argue their case more effectively. If I were to continue this investigation, I would separate it from the theatre workshop studies.

I also feel that it would be valuable to continue the theatre workshop studies. The primary change I would make (presuming I couldn't conduct them under the ideal conditions described above) would be to not worry about whether the concept map of the portal concept represented the understanding of the participant without any influence by the researcher. This would allow me to talk to participants about the portal concept, ask them to look at selected readings before the workshop, and other activities which would enhance the educational component of the workshop by supplying the participant with more subject matter content than was present in this study.

Finally, I would like to develop a core of participants whose role would be closer to that of research colleagues than workshop participants. This group would work together for six months to a year to conduct test workshops among themselves, and develop new plays and support materials. Each core participant might also conduct theatre workshops with others outside the group. Such a study with core participants would need to consider the advantages and potential pitfalls of participatory action research. In a sense, such a study would also be an attempt to determine if the structure of Professor Pimentel's Environmental Policy course[33] can be replicated.[34] Part

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[33] In this course, a group of about 12 students work for a year researching an environmental policy topic. Each student is responsible for researching a sub-topic of the main research question. Pr. Pimentel serves as a coordinator and resource person. The first semester culminates in each student writing a position paper on their sub-topic. The second semester is primarily devoted to the collaborative writing of a single, integrated research paper. Pr. Pimentel has a nearly 100% track record of having these papers accepted for publication.

of the task of such a group would be to develop and expand an electronic

resource base which workshop participants of both varieties could draw upon.

When taken together, one or more plays with such an electronic resource base

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[34] Despite the predominance of individual-by-individual research in school settings, the history of technology development provides several key examples where collaboration between people of different fields has been critical to success. For instance, the development of the negative feedback amplifier, which eventually made widespread long distance telephone service possible could not have happened without theorists and engineers working together. "The story of this [negative feedback] amplifier illustrates many themes in the history of technology. Although the invention can be traced to a 'flash of insight' by a single person, the inventor was well trained in mathematics, engineering, and science, and had been working with others in this area. The development of the amplifier was truly a team effort at Bell Labs; theorists with excellent mathematical skills developed a theory that helped engineers understand the original invention and develop it further." (Kline 1993, p. 84) A more recent example of the value of cross-discipline, and cross-profession collaboration can be found in the history of technology of World War Two. "A unique feature of TRE [the British Air Ministry's Telecommunications Research Establishment, which helped develop microwave radar and other technologies crucial to Allied success in World War Two] were the 'Sunday soviets,' freewheeling discussions between staff scientists, senior service officers, government officials, and RAF combat crews. The soviets provided candid feedback that helped remove snags - both hardware and operational - from the radar." (Kline 1987, p. 56) These 'Sunday soviets' can be seen as analogous to more recent movements in the management arena for Total Quality Management and related ideas. For instance, a recent article in <u>Fortune</u> described how Boeing had had an experienced pilot as a part of the design team for new airplanes. Recently they added an experienced engineer/maintenance person to the design team. This person helped Boeing design a new commercial airplane such that the bulbs for warning lights at the top of the plane can be replaced from inside the plane. This is perhaps not as crucial a development as microwave radar was in World War Two, but such a simple change prompted by the presence of a practical maintenance perspective on the design team should allow the airlines who buy planes from Boeing to save large sums of money.

While the above examples involved research teams with hundreds of years of education between them, similar benefits can be wrought on younger age levels. For instance, in the CTGV Jasper project, "a girl who was considered learning disabled and who rarely contributed in her other classes became the class expert on Queen Victoria. She kept reading more and more about the queen and classmates soon looked to her for information in this area." (CTGV 1990, p. 7) This example is also important because it is a direct parallel to Pimentel's Environmental Policy course.

could be seen as a macrocontext within which workshop participants could situate their work.

What worked and what didn't work?

The most important element that didn't work was the objective of proving that educational theatre creates positive conceptual change, and that therefore educational theatre is worth doing. This led to an initial study design which demanded far more time than was feasible for most participants.

The most important element which did work was a willingness to be flexible. This included taking detailed observational notes during the workshops, not only of the participants, but most importantly, of myself. This led to a change in the focus from an experimental design where the researcher and participants are detached from one another, to a curriculum design and evaluation where, ideally, the researcher and the participants are exploring the portal concept together.

Is Educational Theatre a good way of reflecting on ideas?

Yes. Educational theatre, when conducted in a critical and reflective manner, is worth more than a loaf of bread and more than a movie. The process results in valuable criticism which should help the author of the play improve her future work. It can expose students to new ideas and give them an anchor with which to moor their future education.

Finally, educational theatre can be extremely adaptable. It can be coherently taught in two hours, such as in these workshops, or it can be taught in an entire semester, such as in the syllabi presented in Appendix G below. Because educational theatre incorporates art and science, it can provide an entry to a meaningful education for a wide range of students.

I am conducting a study of the interrelation between issue-specific understanding and the theatre. The purpose of the study is to test an educational approach which combines concept mapping and play reading.

This study requires a total time commitment of 4 to 6 hours. While you may withdraw without penalty at any time, it is understood that if you start the study you will make a good faith effort to complete it.

Signing this form gives permission for me to include your responses to research tasks (interviews, questionnaires, concept maps etc.) in my data set. Concept maps created for this study are likely to be included in the final report.

I will make every effort to ensure the confidentiality of your responses. Alternatively, you may request that your authorship be indicated on any of your concept maps reproduced in the final report. If you have any concerns about this project at any time, you may communicate your concerns--anonymously, if desired--to either:

Robert Abrams
Principal Researcher
Education Department
Kennedy Hall, 4th Floor
Cornell University
Ithaca, NY 14853
phone: 256-5280
e-mail: rha2@cornell.edu

--or--

Joseph Novak
Education Department
Kennedy Hall, 4th Floor
Cornell University
Ithaca, NY 14853
phone: 255-3005

Circle one of the options below:

Option 1) Do NOT include my name with my concept maps.

Option 2) You may include OR not include my name with my concept
               maps as seems appropriate in each case.

Option 3) ALWAYS include my name with my concept maps.

_____
Participant Signature

Appendix B: Environmental Justice Pre-Study Questionnaire

Contact Information

Name:
Address:
Phone:
E-Mail:

Background information:

Age:
Gender:
Ethnicity:
Current Educational level or highest level attained:

The Questions:

Please estimate your current level of understanding of the following:

Environmental Racism	None	Minimal	Some	Good	Excellent
Environmental Issues	None	Minimal	Some	Good	Excellent
Racism Issues	None	Minimal	Some	Good	Excellent
Theatre	None	Minimal	Some	Good	Excellent
Use of Computers	None	Minimal	Some	Good	Excellent

Appendix C: Post-Study Questionnaire.

Contact Information

Name:
Address:
Phone:
E-Mail:

The Questions:

Question 1) Have you read anything about environmental justice/racism/equity recently? If so, where?

_____

Question 2) I found the experience of this study (concept mapping and play readings) to be:

__ Very entertaining
__ Somewhat entertaining
__ Neutral
__ Somewhat not entertaining
__ Very not entertaining

Question 3) My understanding of environmental racism:

__ Increased greatly.
__ Increased somewhat.
__ Stayed the same.
__ Was made somewhat less clear.
__ Was made greatly less clear.

Question 4) Do you plan on pursuing the topic of environmental racism further?

__ Yes
__ Maybe
__ No

Question 5) Would you like to participate in future studies similar to this one? Please indicate which topics you are interested in.

__ Yes
__ Maybe
__ No

I am interested in the following topics:

_____

Question 6) I am interested in figuring out how you would value this experience relative to your other interests. This question is similar to a technique known as contingent valuation,

often used in court cases to determine how much people value a good for which there is no tangible market, such as a proposed air clean up program.

Was this experience worth more, the same, or less than the following:

Than a MOVIE
  __ more
  __ the same
  __ less

Than a LOAF of BREAD
  __ more
  __ the same
  __ less

Than _____ (the product or service of your choice)
  __ more
  __ the same
  __ less

Suppose that you wanted to make sure that this service could be offered again, and further suppose that in order to do this again we would need to pay someone to help organize it, we would need to pay a royalty to the author of the plays, and we would need to pay for some overhead, including publicity and the rent for a room.

Please indicate what you would be willing to pay: _____ .

Question 7) Would you like a copy of the final report? (There will be no charge for participants of the study.)

Yes
No

Question 8) If you have suggestions which would improve future workshops please write them down below.

Thank you for participating in this study.
Sincerely,   Robert Abrams

Appendix D: Index to the Plays

Title	Author	Class	Issue	Date	Type	Length pps	Roles M,F,V	Publisher/ Translator
The Dilemma of a Ghost	Aidoo, Ama Ata	1	Resource Conflicts	1964	D	47	4,9	Longman
Fen	Churchill, Caryl	1	Agriculture, Property Relations	1983	D	45	1,5	SF
Dumping Ground	Diggs, Elizabeth	1	Toxic Waste, Environmental Equity	1982	D	20	2,1	DPS
Laughing Wild	Durang, Christopher	1	Pollution et al	1988	D	65	1,1	Grove Press
Handy Dandy	Gibson, William	1	Nuclear	1984	D	52	1,1	DPS
Kissing Sweet	Guare, John	1	Air Pollution	1971	C	6	Var	DPS
Sarcophagus	Gubaryev, Vladimir	1	Chernobyl, nuclear	1986	D	102	13,7	Vintage Books/ M. Glenny
Another Antigone	Gurney, A.R.	1	Nuclear	1985	D	71	2,2	Penguin
Savages	Hampton, Christopher	1	Slaughter of natives	1974	D	64	9,2+var	Faber & Faber
Food From Trash	Hill, Gary Leon	1	Hazardous Waste	1983	D	82	8,4	TCG
Trees	Horovitz, Isreal	1	Anguished Christmas Trees	1970	D	8	3,1	DPS
An Enemy of the People	Ibsen, Henrik	1	Groundwater, Local Economy	1882	D	109	10,2	Viking Press
The Killer	Ionesco, Eugene	1	Radiant City	1959	D	101	6,2+var	Donald Watson
Mother Earth	Jauregui, Manuel	1	Mistreatment of Earth, bilingual	1979	P	6	var	GCP
Alligator Man	Kaplan, Jack A.	1	Poaching, Environmental Equity	1974	C	17	3,5	DPS
Have Gas - Will Travel	Kleinau, Marion	1	Overconsumption of Gasoline	1975	CM	11	3,3	ERIC

Mr Energy & the Whiz Kids	Kleinau, Marion	1	Energy Conservation	1975	CM	15	4,4	ERIC
Indians	Kopit, Arthur	1	Biological and Cultural Extinction	1969	D	81	20,3	Hill & Wang
The Water Engine	Mamet, David	1	Transportation, Alternative Fuels	1977	D	67	6,2	Grove Press
Cat's Paw	Mastrosimone, William	1	Clean water	1985	D	54	2,2	SF
Meetings	Matura, Mustapha	1	Inappropriate Technology	1982	D	33	1,2	Methuen
Feedlot	Meyers, Patrick	1	Factory Farming	1977	D	31	5,0	DPS
Robin Hood	Nigro, Don	1	Deforestation	1983	C	102	19,11	SF
Spokesong	Parker, Stewart	1	bicycles	1980	D	66	4,2	SF
The Root of Chaos	Soderberg, Douglas	1	Fire in abandoned coal mine, fear	1986	D	26	3, 2	DPS
The Treasure Makers	Sternberg, Pat	1	Recycling, Children's Theatre	1982	C	45	2,3,6	SF
One More Little Drinkie	Terry, Megan	1	Drug Dependence, Pollution	1970	C	6	3,2	SF
Toronto at Dreamer's Rock	Theatre Direct	1	Indigenous History, Pollution	199?	D	?	3, 0	Theatre Direct
Angels Fall	Wilson, Lanford	1	Nuclear	1983	D	98	4,2	Hill and Wang
Let Me Hear You Whisper	Zindel, Paul	1	Animal Testing	1970	D	40	3,2	Harper and Row
Birds	Aristophanes	2	Man in Nature	414 BC	C	92	Lots var	A. Sommerstein
The Automobile Graveyard	Arrabal, Fernando	2	Junkyard of Cars	1960	D	61	5,2	Grove Press
End Game	Beckett, Samuel	2	Anihilation	1957	D	91	3,1	GW
Rose Cottages	Bozzone, Bill	2	Elder Health Care	1985	D	75	4, 2	SF
Another Season's Promise	Chislett, Anne & Keith Roulston	2	Farming	1988	D	65	7, 4	DPS

Title	Author		Topic	Year	Type	Pages	Cast	Publisher
Foxfire	Cooper, Susan & Hume Cronyn	2	Appalacian Culture, development	1983	D	89	4, 2	SF
The Road to Mecca	Fugard, Athol	2	Public Art, Urban Planning	1985	D	76	1,2	TCG
Barbarians	Gorky, Maxim	2	Development	~1910	D	121	15,8	SF, KH Blair
Exit the King	Ionesco, Eugene	2	Death	1963	D	89	3,3	Donald Watson
The New Tenant	Ionesco, Eugene	2	Materialism	1958	D	26	3,1	Donald Watson
Moon on a Rainbow Shawl	John, Errol	2	3W Poverty, Women's Rights	1958	D	71	10,5	Faber & Faber
Smoke	Klavan, Laurence	2	Smoking	1983	C	10	5, 1	DPS
End of the World with Symposium to Follow	Kopit, Arthur	2	Nuclear arms race	1984	D	94	9,3	Hill & Wang
Discrimination for Everybody!	Mabley, Edward	2	Discrimination	1947	C	19	Var 22	SF
One Bright Day	Miller, Sigmund	2	Business ethics, Pharmaceuticals	1952	D	67	11, 4	DPS
Operation Sidewinder	Shepard, Sam	2	60's Anarchy	1970	D	70	31, 8	Bantam Books
Visit to a Small Planet	Vidal, Gore	2	Nuclear, Violence	1955	C	44	8,2	Little, Brown
The Folks Next Door	Carroll, John	3	Pollution	1979	C	79	6,3+var	SF
Big Sur	Gagliano, Frank	3	Ecology	1971	C	28	6,4	DPS
The Madwoman of Chaillot	Giraudoux, Jean	3	Oil drilling in Paris	1947	D	132	17,8	Random House
A Place on the Magdalena Flats	Jones, Preston S.	3	Agriculture, Nuclear	1975	D	64	4,4	DPS
The Prisoner of Second Avenue	Simon, Neil	3	Pollution	1972	C	85	2,4	Random House
Plotters of Cabbage Patch Corner	Wood, David	3	insects, pesticide	1972	CM	58	6, 4	SF
DPS = Dramatists Play Service			D = Drama	Var or V= roles can be M or F				
GCP = Gato Colorado Productions			C = Comedy					

GW = Grove Weidenfeld		CM = Children's Musical					
SF = Samuel French		P = Puppet					
TCG = Theatre Communications Group							

See Chapter 2 for a description of the classification system.

Table of Contents for the Plays

Appendix E:

Theatre of the Environment Play Catalog

Class One Plays

The Dilemma of a Ghost (4)[35]

The Dilemma of a Ghost, by Ama Ata Aidoo (1964), is Class One Theatre of the Environment. The play tells the story of Eulalie Yawson, an African American who married a Ghanaian student, Ato. She has moved to Ghana with him.

Shortly after she arrives in Ghana, Eulalie comes into conflict with Ato's family. Much of this conflict arises from different expectations regarding resource use. This conflict can be illustrated with a conversation between two women in Ato's village. One women has commented that Ato has "no penny to buy himself a shirt ... / but the strangest thing is that / She too works.

1st W: Then how does she spend all that money?

2nd W: By buying cigarettes, drinks, clothes and machines.

1st W: Machines?

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[35] The number after the title of the play indicates the edition of the Theatre of the Environment for which this play was originally reviewed.

2nd W: Yes, machines. / Her water must be colder than hailstone. / I heard it said in the market place / Monka's teeth were set on edge / For drinking water in her house. / And her food never knows wood fire.

1st W: Does she tear at it uncooked?

2nd W: As for you, my sister! / She uses machines. / This woman uses machines for doing everything." (Aidoo 1964, p. 38)

This conflict gives us a small glimpse into the complexities of resource use in the world. Eulalie represents a First World/Third World resource conflict. And yet she herself is a product of poverty in America.

This play is especially interesting from an American perspective because it gives the reader a glimpse of race related conflict which is not framed by the usual American black versus white context. For instance, when Ato is trying to explain to his family that he has married an American, his family assumes she is white. Ato protests, America "is not the white man's country. ... Eulalie's ancestors were of our ancestors. But as you all know, the white people came and took some away in ships to be slaves..." He is interrupted by his grandmother who calmly states, "And so, my grand-child, all you want to tell us is that your wife is a slave?" (Aidoo 1964, p. 18) Thus, despite Eulalie's rising from poverty to get a college degree, and despite her voluntary passage back to Africa which in at least a small way is a testament to her ancestors' will during their involuntary passage the other way, some would blame her as a victim for a victim's history. There are many ways to enslave ourselves.

One of my favorite moments in the play occurs at the very end. Ato and Esi, Ato's mother, are having a heated argument over Ato and Eulalie's use of birth control. The tension is palpable in part because Eulalie is missing. At the

height of the argument, when Esi has driven Ato into a state of speechlessness, Eulalie stumbles into the courtyard, clearly crumpled by the demands being placed upon her. Esi takes Eulalie into the house to care for her, despite their long-standing conflict. The Dilemma of a Ghost shows that human decency can transcend the barriers we borrow from the past.

Fen (2)

Fen, by Caryl Churchill (1983), is one of those plays which, in my somewhat biased opinion, is trying to express social commentary, but gets bogged down (pardon the pun) in various sordid love affairs.

Fen is set in the British landscape of agricultural tenancy. It is bracketed by references to the true ownership of the land. It gives a suggestion for the poverty and stagnation of agricultural workers: the production treadmill forces farmers to mechanize, but to mechanize, they must trade generative capital (land) for disposable capital (tractors).

Without the prologue, where a Japanese business man gushes about the profitability of the fen, this play would probably be Class Three.

Dumping Ground (4)

Dumping Ground, by Elizabeth Diggs (1982), is Class One Theatre of the Environment. This short play is concerned with a community whose health is being insulted by the toxic garbage being dumped by a big company.

Two people, Clayton and Monica, who were at a recent community meeting where this problem was discussed have taken the initiative to try and stop the dumping by blocking the trucks that haul the waste. Clayton and Monica are classic examples of people whom the system has forsaken. Clayton's wife, for instance, was killed by the chemicals she worked with, but the company wouldn't settle, and he couldn't afford a lawyer. Even if he could have afforded a lawyer, he would need a class action suit to be effective, but the workers in the company that he and his wife worked for weren't organized. (Diggs 1982, p 15)

While the characters discuss a variety of strategies they could take, their basic strategy revolves around attracting the media to the issue.

The most intriguing part of this strategy discussion is the portion that deals with gender. Monica suggests, "there are ways I can impress things upon him that you can't ... Feminine persuasion. ... I could just break down in tears." (Diggs 1982, p. 11) Later on, Monica does herself one better, "this is the best idea yet! There is nothing a man hates more than a crazy woman, right? I read in a magazine that when a woman's about to get raped, if she starts foamin at the mouth and going into a fit - he'll just turn tail and run. I'll have an epileptic seizure and you ask them for help - you grab me and yell, 'Help me out here - this woman's gone berserk!' " (Diggs 1982, p.18) Monica is looking for an easy way out; she is willing to act out others' negative, stereotypical views of her if it will get her what she wants. Lest anyone think ill of her, there are depths to which Monica will not sink: when the truck driver suggests that he will take his load back to the plant if she sleeps with him, she flatly refuses. (Diggs 1982, p. 24)

Much of the current discussion of issues such as toxic dumping revolves around questions of race. While Dumping Ground does not address these issues, there is nothing in the text of the play that would preclude any of the characters from being portrayed as various races.

The play ends with Monica, acting out of desperation, laying down on the road in front of the truck. The driver, not being willing to run her over, takes his load back to the plant.

Thus the play ends with a small victory, but it is a victory in a still unresolved conflict.

While the characters in Dumping Ground are not sketched in great detail, and the social commentary is somewhat less than biting, the play's simplicity can also be an asset. The play's short length makes it usable in a standard length meeting. The play's racial non-specificity makes it usable by a wide variety of groups facing toxic assaults.

Laughing Wild (2)

Laughing Wild, by Christopher Durang (1987), is fundamentally a play about two mildly deranged personalities, most likely fundamentally urban personalities. The two characters carry on with long monologues. Both monologues start from tuna fish and proceed from there. While the action of the play is not about the environment, its detail is significant enough that categorizing this play as Class Three would be an error. The detail, which makes extensive and explicit reference to the environment, amounts to a

paramount undercurrent which is necessary to support the action. Thus, while I am tempted to create a Class 1.5, I have decided to provisionally put this play into Class One.

The play also makes similar references to issues such as women's rights and homosexuality. I will leave the description of these aspects to someone else's thesis.

Some examples:

WOMAN: "winter has gotten less cold than it was when I was a child, it's probably something terrible the captains of industry have done to the atmosphere, probably some ozone layer has been thinned out beyond repair, and the sun is coming through more directly, and we'll all die from it and get skin cancers, and breathe wrong things through our nostrils" (Durang 1987, p 89)

"I want Ronald Reagan hung upside down over sulphur emissions and made to inhale toxic waste, just like those animals who are made to smoke three million cigarettes." (Durang 1987, p96)

"I was just thinking about Chernobyl. That's like a scream from the universe warning us, but we're not paying attention. I can't believe they don't know what to do with nuclear waste, and then they keep building these things." (Durang 1987, p105)

"And there's acid rain and something wrong with the ozone layer, and the secretary of education doesn't want schools to educate students about the dangers of nuclear proliferation, but instead to focus on how terrible the

communists are. And the secretary of the environment isn't in favor of protecting the environment, doesn't see a problem. The appointments to these offices in the Reagan administration seem like a sick joke ... like naming Typhoid Mary the secretary of health and welfare." (Durang 1987, p 106)

"Today our show is about nuclear proliferation. AND it's also about the destruction of the ozone layer. AND it's about sex education in the schools - should we tell our children about condoms or just wait until they get AIDS?" (Durang 1987, p 128)

Laughing Wild would be difficult to use directly as educational theatre because its references are not validated, and are often topical. This is not a condemnation of the play itself. Most serious plays don't bother to validate their references in the program notes. However, if such notes were to be included, especially if the notes and the play itself were available in an electronic, linkable form, the value of the play would be greatly enhanced. A Generative Property Rights Framework (Abrams 1991b), which would allow the play to be released electronically while protecting the rights of the author, might even solve Mr. Durang's problems with Frank Rich. For instance, one might move from the reference on p. 142, where cans of tuna fish turn into poison, to a discussion of dolphins killed in tuna fisheries. Or conversely, someone reading about dolphins being killed who gets fed up at not being able to think positively could link to one of MAN's discussions of affirmation.

Handy Dandy (2)

Handy Dandy, by William Gibson (1984), is Class One theatre of the environment. This play is a well written depiction of the conflict between protest and law.

An elderly nun is arrested for trespassing at a military research laboratory. She confronts a non-activist judge "PULASKI: I call the balls and strikes. It's not for me to change the law." (Gibson 1984, p. 10). The play begins as an argument over what is important.

"Molly: If I had a child now I would think, when I saw the missiles zooming in, did I do anything to keep it from happening?

Pulaski: And that's your defense?

Molly: Yes, I don't see that it differs from snatching a child away on the lawn from somebody with a power mower. (Gibson 1984, p. 8)"

Over the course of the play, the two characters effectively change places. The judge is transformed from a neutral arbitrator of the law as it is written - "Pulaski: your private feelings about it (development of weapons) are of no relevance to the law of trespass."(Gibson 1984, p. 9) - to a person who cares about another person.

The activist stance of the play is well summarized by the following statement of Molly (the nun).

"Molly: The world is a huge place, as you said, and bloody - and a dove won't change it. But one piece of the world I can change, and it's me. And that's what the conversion means." (Gibson 1984, p. 44)

In the end, the judge decides that he can no longer "continue through life without pain" (Gibson 1984, p. 45) because he now cares what happens to one person (Gibson 1984, p. 46).

Handy Dandy is written in such a way that it almost doesn't matter what is being protested. The plays greatest value is its detailed treatment of two characters who both care about the world, albeit in different ways. The play would be an excellent starting point for many a discussion.

Kissing Sweet (2)

Kissing Sweet, by John Guare (1969), is another Class One work which was originally written for the public television series called FOUL!. This is a very short play which takes on the subject of air pollution. The premise of the play is that air pollution is not caused by industry, but rather by people's body odor. If only people would buy various deodorant products, the air pollution problem would be solved.

The play is presented as a series of caricatures of commercials. The commercials are juxtaposed to the frenetic stage activity, which consists of stage hands constantly piling newspapers and garbage on the stage, and the actors moving in circles, making clouds of smoke, and emitting discordant noises.

I would not characterize Kissing Sweet as a great play, but it is a fun play.

Sarcophagus (1)

Sarcophagus, by Vladimir Gubaryev (1986), tells the story of the Chernobyl nuclear disaster. It attempts to tell the story in a naturalistic manner, yet with a certain amount of abstraction necessary to properly appreciate the disaster. Sarcophagus is Mr. Gubaryev's attempt to adequately convey what he saw and felt when, as science editor for Pravda, he was the first reporter to be on the scene.

Sarcophagus is interesting because it attempts not only to give an intelligent depiction of how a nuclear reactor functions, but also of the social interactions that are as important or perhaps more important than the technical details. This play offers an interesting parallel to David Mamet's The Water Engine because both plays present the interference of some powerful political/social force in what would otherwise be a positive, humanitarian, life-giving endeavor. The inventor in The Water Engine can be paralleled most directly to the Physicist in Sarcophagus.

Another Antigone (2)

Another Antigone, by A.R. Gurney (1985), is a pleasant play. It contains an interesting dialog on the nature of the arms race and the appropriateness of protest and stance within the academic context. The professor is against the nuclear arms race, but is against mucking with the classics. His female student wants to write a re-write of Antigone as a nuclear protest. She hopes to change the world, and have the play accepted instead of the regular term paper. The

professor has had countless students want to re-write Antigone to comment on countless issues (Gurney 1985, p 104). He is quite sick of this.

The play within the play, what glimpses we have of it, is superficial and declamatory. About midway through, <u>Another Antigone</u> is consumed by a concern over alleged anti-semitic remarks. I feel that given what evidence exists in the play, the charges are unfounded, and are generally an unnecessary diversion to the true action of the play.

<u>Another Antigone</u> would be better served by a detailed presentation of the play within the play. This might lessen the "greekness" of the production values, but it would improve the play overall.

Savages (1)

<u>Savages</u>, by Christopher Hampton (1974), is a play about the destruction of indigenous peoples in Brazil, and by extension, elsewhere. It attempts to portray events in a realistic and objective fashion. The prime intent of the play, one might even say the Lehrstuek thrust of the play, is balanced by a parallel and opposed counter-argument. The intertwining of an intellectual and a physical theme allow the reader to achieve a critical distance, thus allowing the actions to take their effect, and thus be judged, on their own merits.

It is possible to link <u>Savages,</u> <u>Indians,</u> and <u>The Water Engine.</u> All three deal with the subjugation of a moral intent by the imposition of a vastly more powerful force. <u>Savages</u> and <u>Indians</u> are an interesting pair, because both deal

with similar issues and both raise issues of presentation, though certainly in contrasting style.

Food From Trash (1)

Food From Trash, by Gary Leon Hill (1983), is a Class One Theatre of the Environment.

Environmental problems are often slow burners. They are hard to see until they are only a few feet away, much like elephants. Food From Trash is a slow burner too. One can read the play for a long time without realizing that it does engage environmental issues.

Food From Trash is about garbage people. They haul garbage to make something that approximates a living, they live with garbage, they eat garbage, and they treat each other like garbage. Just as they are throwing *things* away, so are they throwing their lives away. The family is as dysfunctional as the environment. Setting the scene in the garbage dump makes such connections evident.

Food From Trash forces us to confront an ongoing symbolic problem in the environmental movement: what is one to do with the American Indian? Usually, environmentalists idolize him or her (it is better if the American Indian is female because then one can get the peaceful woman concept into the package as well). On the other hand, one can admit that American Indians are real people and have been no better or worse on the whole than the rest of us. Enter Running Joke.

Running Joke is a better man than most in this play. He is a great psychologist, scientist, and saintly martyr for the earth and the people. He is a man who can keep on talking calmly after having his chest ripped open by a shotgun. At times it seems as if Running Joke's culture is mostly an excuse to have him do wild things that no other human is capable of, like eating mutated, two-headed rabbits. (Hill 1983, p. 2-1-49)

Nonetheless, one is forced to take a closer look at this character. Even if Running Joke is more myth than man, he is a different kind of myth. Normally, when one thinks of the mythical American Indian, one does not think of a man who converts cars to run on methane, who eats contaminated animals, who drinks sludge that would kill anyone else on the spot, and who in the past cleaned nuclear reactors for a living to the extent that he now sets off Geiger counters that are pointed at him. Mr. Hill has taken the myth of the American Indian and created an industrial saint.

Can accurate science be taught through drama? <u>Food From Trash</u> forces us to consider this question even though its intended presentation is highly stylized. Much of the play, especially towards the end, revolves around the question of whether methane could be profitably extracted from the landfill, and whether hazardous leachates could be contained. My class came to the consensus that extraction of methane was believable because it was explained in the play, while the drinking of sludge was not believable because no attempt was made to explain it other than "I took in three times [the radiation] what the government says is okay. [Therefore,] I can drink that water." (Hill 1983, p. 2-5-71) In other words, if a scientific concept or fact is explained in a play, the audience will probably believe it, and if it is not they won't. It is beyond the

current scope of my research to determine whether all the scientific references in <u>Food From Trash</u> are accurate.

One such scientific item is certain however. It is unimportant whether the long discussion at the end of the play in which Running Joke and Pisanger outline a complicated plan for controlling hazardous leachate in the landfill is true. Even if such measures are technologically possible, they are not feasible. Most importantly none of it could achieve the result with value: putting a single strand of hair back into Pisanger's son's head. It is clear that much of what we do consists of false technical solutions.

Trees (1)

<u>Trees</u>, by Israel Horovitz (1970), is a Class One Theatre of the Environment. It is primarily a thought piece. In <u>Trees</u>, the tree can think and feel and hurt just as people can. A father and daughter come to chop a tree to use for a Christmas tree. Most of the play consists of a deliberation between the father and the daughter, Rachael, over whether they should take the little tree, because it is cute, or the big tree, because it is big. At the same time, the big tree is arguing that he should sacrifice himself to save his son, while his son wants to run, even though it is not possible, being a tree. The son is not afraid of "getting into a little trouble" (Horovitz 1970, p.15) before he dies. In the end, the humans decide to chop down both trees in a contest to see who can chop down his or her tree first. The trees start oozing blood and plead for their lives. The humans do not relent. The big tree falls on them and kills them as his only way of taking revenge for his son's murder.

Trees is a compelling one act which draws the emotional parallel between the experience of humans and the experience of trees. However, the play does not offer any positive solutions to the problem of consumer driven deforestation.   For instance, the humans could have decided to use a potted tree, decorate the tree where it was in the forest, or simply not have a tree at all.

As to presentation, Trees is interesting because it was originally written for a television special called "Foul!" It would be useful to compare the original televised production with what could be done on a stage.

There are several themes in Trees which have educational potential. A comparison can be made between the relative ages of trees and humans, as when Man Tree cries, "Don't cut him down, he (my little kid) is only fifty." (Horovitz 1970, paraphrase p. 15)

It is important to consider the reaction that an audience may have. In particular, if Trees were shown to a children's audience, one possible consequence would be the kids going home and telling their parents that they don't want a Christmas tree. If this is an acceptable outcome, then there is no problem, but if the parents react negatively, the producing theatre must be prepared to respond appropriately.

Trees would be a useful play in an educational series in which city kids are taught where the products they use come from (i.e. not from the supermarket.). My class could not agree whether it would be better to perform the play, and then take the kids to the woods, or take the kids to the woods so as to give them an experience with which they could relate to the

play, and then perform the play. We did agree that performing the play at a campfire *while* out in the woods might be terrifying.

A critical educational question that the use of <u>Trees</u> brings up is, "How does one avoid wood?" After all, wood is all around us, and in many cases is a desirable material from a purely aesthetic point of view. One might suggest using a plastic Christmas Tree, and counter with questions about how such a tree is produced, does it produce pollution, would your family have the space to store one? One might buy a potted tree and then plant it outside after January first. These technical solutions would be good to discuss, and undoubtedly there are others, but they miss the critical question, as most technical solutions often do.

This question is "Why?" Why did Father and Daughter decide to take *two* trees? If they really really really needed a Christmas tree (though why one needs a Christmas tree is another good question since the tree is borrowed from pagan rituals, though if the tree symbolizes Christian multi-cultural solidarity with Druidic spirituality, using one must be regarded as acceptable - though most people probably just get a tree because everyone else does.) couldn't they have chosen *one?*

Especially with children, though equally valid with respect to adults, make sure that you don't leave your audience helpless and overwhelmed. Make sure that your audience has a chance to ponder what they can do - do it before they leave the theatre. The play as an educational experience will only work if there is a direct tie between the constructed reality and everyday reality.

The class reacted quite negatively when I suggested that one way <u>Trees</u> might be performed would be to run the play once as Mr. Horovitz suggests with black actors playing the principle trees and white actors playing the humans, and then running the play a second time with no changes (except perhaps taking the dialogue of the trees out of Black English) where the white actors would now play the trees and the black actors would play the humans. Some of my students felt that doing this would blunt the plays intended indictment of the reality that environmental problems often disproportionately affect poor minority communities, where I felt that such a theatrical maneuver would show that the mentality that oppresses is universal, that one is not guilty or innocent of environmental transgression because of the color of one's skin. We concluded that while such a maneuver would be impractical with respect to <u>Trees</u>, it is a promising dramatic idea for some up and coming playwright to try.

Enemy of the People (1)

<u>Enemy of the People</u>, by Henrik Ibsen (1882), is a Class One Theatre of the Environment. It seems that if a person knows of no other play that deals with the environment, they know about this play.

<u>Enemy of the People</u>, which is based on a real occurrence, concerns a man, Dr. Stockmann, who discovers that the waters being used by the local spa are polluted. He feels that it is his civic duty to let the town know. When he persists, the townspeople try to run him out of town.

While the play deals primarily with the obligation to speak, it offers several other parallels and insights.

After Dr. Stockmann has "fallen" the schoolkids "started calling [Dr. Stockmann] names" (Ibsen 1882, p74) to his son's face. Similarly, in <u>Road to Mecca</u>, the children throw stones at Miss Helen's house because they are frightened by its strangeness. In both cases, it becomes apparent that adults use their children as an outlet through which to vent their hatreds and distrust. It is no small wonder that peace is often the exception rather than the rule.

Dr. Stockmann proposes that "One does not automatically become 'A Man' by having human shape, and living in a house, and feeding one's face - and agreeing with one's neighbors. That name has to be earned." (Ibsen 1882, p57) It would be interesting to apply this concept of the acquisition of personhood to the abortion question.

Dr. Stockmann is a classic case of a thwarted idealist. He "dreamed up the whole project of the Springs (the Spa), not so that fine carriages could crowd our streets, but so that we might cure the sick, so that we might meet people from all over the world and learn from them, and become broader and more civilized." (Ibsen 1882, p57) When the water supply was built in the wrong place to save money, and people began to get sick as a result, the reasons presented for advising a cover-up are precisely the "fine carriages" that are supposed to "greatly increase the income of every man in this room in five years." (Ibsen 1882, p54) Dr. Stockmann lost control of the idea, so therefore he also lost control of the actions.

The consensus of my class was that it was the most powerful, and the most sophisticated of all the plays reviewed so far (which was the First Edition when this review was written). By itself, its date of authorship, 1882, proves that a well-written play has the potential to continue to speak to audiences hundreds of years later.

It also proves that we haven't learned the lesson the playwright was trying to teach, but that certainly isn't Ibsen's fault.

The Killer (2)

The Killer, by Eugene Ionesco (1959), is Class One theatre of the environment. It is a play about urban planning, specifically Le Corbusier's Radiant City.

The Radiant City is a beautiful idea. To become a "smiling being" you need a "smiling world." (Ionesco 1959, p 19) Changing the context of living should change the character of men. It never rains in the radiant district; the grass is watered from below. In the rest of the city it is cold and damp. (Ionesco 1959, p 14) There is a tram stop in the district. (Ionesco 1959, p 16, see also the idea of the 'Pedestrian Pocket')

However, the district is flawed in practice. It is marred by violence. The radiant city is inhabited by a thug. (Ionesco 1959, p 33) The people who live in the radiant district want to leave. (Ionesco 1959, p 31)

Ionesco's appraisal of the radiant city parallels real radiant cities. Many housing projects are inhabited by violence. In some apartment complexes Le Corbusier built, the apartments were not lived in the way that he intended.

In the end Berenger concludes that "there is nothing we can do." I believe this appraisal is overly pessimistic. If planners and architects paid more attention to what people value in a space, they might come closer to realizing their utopian community.

The Killer could stand interpretation as a parable about the modern urban dilemma without damage or undue twisting. It could serve so admirably if supported by extensive background materials. The references to Le Corbusier are few and far between, at least in the American Elementary Schools. The Killer is also useful in this context because it is one of the more realistic of the absurd works, and thus could serve as an entry point into this body of work for new students.

Mother Earth (3)

Mother Earth, by Manuel Jauregui (1979), is a puppet play about how modern people mistreat Mother Earth. The play touches on a wide variety of pollution related environmental issues, as well as solar energy. The plot of this short gem tells the story of Mother Earth, who complains to the Sun that she is being mistreated. The Sun calls on a variety of Latin American gods who confirm Mother Earth's complaints. The Sun then travels to Earth where he is brushed off by a number of unfeeling moderns. He is about to turn off his light in order to punish the humans when two Indians call on the Sun to

remind him that they need his light in order to grow their corn. The Sun relents because "there still are people who need me." (Jauregui 1979, p 6)

This play comes with a variety of simple drawings that could be copied, cut out and colored to make stick puppets. The text of the play is supplied in English and Spanish.

With a little effort, this play could make for the start of highly creative, multicultural work with young children.

Alligator Man (3)

Alligator Man, written by Jack Kaplan (1974), is a Class One work. It is set in the Louisiana Bayou. It concerns the conflict between the alligator poachers and their prey, the alligators. In the end, the alligators take their revenge, with no particular help from the federal agents. The play also contains a parallel theme. The poachers are portrayed by white actors and the alligators are portrayed by black actors. The resulting parallel to social oppression is made, though not explained in the text of the play. For example, Les, the poacher, says "I can't say that I was surprised. I expected a trick like this. After kidnapping Georgiana, the gator would attack the pursuer in a cowardly fashion characteristic of his race." (Kaplan 1974, p. 19) Mr. Kaplan makes it clear in his author's note that this parallel is intentional.

I feel that Alligator Man is a good idea which needs more work. A number of key transitions are not believable. For instance, Gruesome Gator's seduction of the poacher's sister-in-law (Kaplan 1974, p 13) happens too abruptly. Also,

while Mr. Kaplan is clearly trying to be sympathetic towards people of color, his portrayals of them are shallow at best and stereotypical at worst. This problem could be corrected if he were to rewrite the play, possibly as an opera.

Its shortcomings aside, I think that <u>Alligator Man</u> would make a useful addition to a curriculum exploring Environmental Equity because it makes the very direct connection between racist oppression of people of color with oppression by the same racist groups of other species. Using <u>Alligator Man</u> as an example, students could write their own plays. They would need to learn something about both their own social circumstances and the natural and urban ecologies in which they live. One might want to start with generative questions such as "When they (i.e.. people from other groups) see you do they see you as a person or as a mule? When you see a mule (or any other animal), do you see someone you can respect or abuse?" Both the process and the resulting product could turn out to be both powerful and believable.

<u>Alligator Man</u> does not address any of the unintentional, institutional problems which can arise in either the social or the environmental aspects of poaching. Potential rewrites or new plays should address these institutional problems as well.

Have Gas - Will Travel (3)

<u>Have Gas - Will Travel</u>, by Marion Kleinau (1975), is a Class One children's musical. This play discusses overconsumption of gasoline and the energy crisis of the mid 1970's. Many of the references are out of date.

Mr. Energy and the Whiz Kids (3)

Mr. Energy and the Whiz Kids, by Marion Kleinau (1975), is a "fairly general and simplified" (Kleinau 1975, p 59) Class One children's musical. It presents a number of clear energy conservation solutions children could undertake. It also makes some attempt to make non-renewable energy sources such as oil and coal personable so that children will get a positive affective response from reducing energy consumptive behaviors. However, this approach does not stand up to logical scrutiny. The play presents oil and coal as friends who are being hurt when they are used. The children are then effectively told that if they hurt their friends a little less, all will be fine. The play also does not even mention renewable energy sources.

Indians (1)

Indians, by Arthur Kopit (1969), is a play that deals with the contrast between reality and presentation. It takes as its thesis the destruction of Native Americans and the ecosystems they depended on. It describes a negative example of the main thesis, and reveals the caution one must apply to any attempt to rely solely on the theatrical for the advancement of a cause, however worthy. The play presents an example of what can happen when the critical faculty is not employed in theatrical persuasion. This play is Class One.

The Water Engine (1)

The Water Engine, by David Mamet (1977), is Class One Theatre of the Environment. In its details, the play is concerned with the development of alternative fuels. In its thrust, The Water Engine concerns the classic small versus big conflict. A poor inventor tries to find people to help him market his engine that runs on distilled water, only to have the very people he turns to steal his plans and kill him. This play would serve as a good starting point for a discussion of the public transportation conspiracy theory.

Cat's Paw (1)

Cat's Paw, by William Mastrosimone (1985), is class one Theatre of the Environment. It's subject is water pollution set in the context of violent actions taken when the law does not offer justice. Such is Victor's view. Darling, a low level EPA official whom Victor has taken hostage, has other ideas. He thinks that the EPA is underfunded, that he can only do so much, that the problems are too large for anyone to expect perfect solutions. Cat's Paw is an excellent play to spark a discussion of the implementation of environmental law and ethics.

Cat's Paw was performed by the Actor's Theatre of Santa Rosa as their contribution to Leadership Santa Rosa Week. While the Actor's Theatre has an audience whose preferences run toward entertainment shows, Ms. Juarez felt that they could succeed with a message oriented play such as Cat's Paw because the play deals with the issue of clean water. Clean water is also an important issue in Sonoma County, where the Actor's Theatre is located. They

staged a special performance for about 40 leading citizens of Santa Rosa. Ms. Juarez felt that the play had succeeded, despite some reservations she has about the script, because "people walked away talking about the ideas." (Juarez 1989)

Meetings (1)

Meetings, by Mustapha Matura (1982), is Class One Theatre of the Environment. This powerful drama, written in dialect, concerns the life of Hugh and Jean, a modern Trinidadian couple. Hugh begins to have misgivings about his life. All he does is sit in boring meetings. He eats out all of the time because neither he nor his wife have time to cook. For a while, when Elsa comes in from the village to cook the old food for him, Hugh is happy. Food is a direct expression of culture, and as such an expression which determines Hugh's identity. Food is also a direct expression of one's environment. Thus Hugh is tied to his environment through his culture by virtue of what he eats.

Jean on the other hand wants none of Hugh's Creole food. She would much rather eat the original, French, food in a restaurant. She likes her job because, as a woman, her job makes her important. Her job consists of selling cigarettes to the locals. She was very proud that she orchestrated the entire advertising campaign for Luna, a new brand of cigarettes with a secret ingredient especially designed for the tropics. She tries not to think about all the people in the village, all the people who died by smoking her cigarettes. The play ends with Jean standing in her house alone, coughing blood.

Meetings is both funny and sad by turns. One can not help but laugh with Hugh as he reels off his favorite foods. One might even want to stage Meetings as environmental theatre as well as theatre of the environment by serving dinner on the stage after each performance. Perhaps not. One can not help but cry at the innocent death portrayed.

Meetings is an intriguing work because while it demonstrates the lack of ethics that often accompanies development, the play shows us that the ills of development can not be blamed exclusively on some foreign imperialist bugaboo. The power to destroy, to pollute without thinking, is within all of us. Those who see the truth, as Hugh did, can not help but follow the calling.

Feedlot (1)

Feedlot, by Patrick Meyers (1977), is a play that is set in the grain elevator of a factory farming cattle operation. It is not so much about factory farming as it is about the people who work there, yet it qualifies as class one theatre of the environment because a direct parallel is established between the effect the nature of the setting has on the nature of the people. A parallel is also established between the existence of cattle and men on several levels. Both cattle and men meekly follow what is expected of them. Both cattle and men are brutally treated at times.

Feedlot also contains an interesting commentary on strategy for dealing with the world. Is it better to make grand protests, such as Gene's forced hunger strike of the cattle, or is it better to forgo such grandstanding in favour of honest communication with other individuals?

Robin Hood (1)

Robin Hood, by Don Nigro (1983), is a Class One Theatre of the Environment. It concerns a reworking of the familiar Robin Hood tale, this time with the emphasis placed on Prince John's desire to chop down Sherwood forest so that he can build a tennis court and other developments. King Richard, it turns out, is worse. He wants to chop down the forest so that he can finance a new crusade and kill Bulgarians. Queen Elenor likes the forest, but still wants to hang Robin Hood.

The play has many funny, often highly physical, moments. It attempts to portray the social injustice of Medieval England. Mr. Nigro makes his point without being overly didactic.

Spokesong (1)

Spokesong, by Stewart Parker (1980), is Class One Theatre of the Environment. It concerns several generations of bicycle shop owners who feel that the bicycle is the greatest thing that ever happened to mankind. It is an interesting attempt to teach about the history of a technology. While the play is full of facts, as a reading it comes off a little dry. I am somewhat dubious as to its potential for performances.

The Root of Chaos (3)

The Root of Chaos, by Douglas Soderberg (1986), takes place in Centralia, Pennsylvania. There is an abandoned coal mine near Centralia in which a fire has been burning for the last twenty years. Despite spending "six point six million dollars ... to extinguish ... the unseen blaze" (Soderberg 1986, p 5), the fire is still spreading. The play takes place in the Cernikowski's kitchen. As the play progresses, each of the Cernikowskis are killed, perhaps by the fire, but more likely, by their own fear.

I have difficulty deciding whether the play is a parable about the meaninglessness of life, or whether it is intended to show just how close to home our "unseen" environmental problems really are. Since it is clearly possible to stage the play with this environmental theme in mind (though the direction would need to be Germanic in nature), and since the image of the burning coal mine is so dominant within the play, I have chosen to categorize The Root of Chaos as Class One.

The Treasure Makers (1)

The Treasure Makers, by Pat Sternberg (1982), is a participatory children's musical. It is Class One Theatre of the Environment. The scene is set in a recycling center run by a retired sailor. This center is more of a "re-use" center than a recycling center because their work focuses on collecting trash and using their imagination to fashion it into something else. Mrs. Zee, the arch-villain of the play, is a society woman who owns the land on which the recycling center is built. She wants it removed so that she can build a parking lot for her art

museum. She has the sailor arrested. In response, the kids who work with the sailor stage a trash sculpture contest, everyone thinks the trash sculptures are much more interesting than the museum art and as a result, the recycling center is saved. Mrs. Zee is finally converted when she discovers that Sailor Mike is really her long lost brother who was washed from the deck of their family's garbage barge when he was eight. Treasure Makers is an educationally valid play, at least insofar as it attempts to have kids use their imagination to solve problems they may not have realized existed.

As I see it, Treasure Makers has three main flaws. First, while it is true that recycling centers often have free stores, and may be involved in the fix-it business, their mainline activity is handling materials such as paper, glass and aluminum. Since these compose many items kids use, it would be useful to portray such activities. Second, the barge that Sailor Mike was swept away from was engaged in ocean dumping of waste. The play gives no indication what so ever that this might not be a good thing to be doing. Third, both in the case of the ocean dumping, and in the case of the never mentioned landfilling, Treasure Makers never attempts to discuss the consequences of *not* recycling.

Treasure Makers provides many opportunities for ad-libbing, so it would not be too difficult to remedy the faults I have outlined above. Otherwise, Treasure Makers can provide an excellent framework for a children's theatre ensemble to practice their craft. If performed in an institutional setting, the kids who comprise the audience might be asked to conduct a Trash Sculpture contest during the week after the performance.

One More Little Drinkie (1)

One More Little Drinkie, by Megan Terry (1970), is Class One Theatre of the Environment. It is a very short one act which concerns a bunch of abstract people who have gotten high and wasted on every imaginable drug. The doctor decides that the woman is pretty far gone, but has an incredible set of kidneys which she should contribute to society by drinking all the rivers and thereby purifying them. So they make her drink the rivers and the play ends. The play is interesting for the connection it draws between large and small scale pollution. It could serve as the genesis material for a longer work, but in its present state One More Little Drinkie is more weird than useful.

Toronto at Dreamer's Rock (3)

Toronto at Dreamer's Rock, by Theatre Direct (199?), is a class one work. This play presents the power of place within indigenous history by bringing three Native American teenagers together. These teenage boys represent Pre-Contact, Present Day, and The Future.

At first, the Pre-Contact teenager has trouble believing that the three of them belong to the same nation. Eventually they work through their differences and in so doing come to a fuller understanding of what it means to be "Indian" and "First Nation" than they had before.

The play discusses in some depth how the various environments have affected the lives of the three characters. The Pre-Contact character is shocked by the size of present day roads. The Present Day character is shocked by the

report that Lake Ontario of the future will only be clean enough to swim in one week out of the year.

This play is especially interesting because it paints a human portrait of Native Americans, and moreover, it is a self portrait. The play is part of a select group of plays in which the author has chosen to present a positive path to the future. Admittedly, the future presented in this play is not entirely positive; in fact, if one were to believe in predestination, in the context of this play the future is on the whole fairly bleak, but any positive handle is a plus.

The only unfortunate aspect of <u>Toronto at Dreamer's Rock</u> (and I admit that I am picking a nit off of the back of a fine play) is that all of its characters are male. To remedy this, I would suggest that the author, or better yet his sister, write a play in the same idiom in which Pre-Contact, Present Day, and Future Native American girls would meet.

Angels Fall (2)

<u>Angels Fall</u>, by Lanford Wilson (1983), is a play in which the characters' lives are set in the context of the nuclear industry, and health. The play is set in a New Mexico where the circumstances of existence rise up to make life meaningless for the characters, each in their own way.

The uranium accident is reported on the radio in an uncertain way. "The radio said there is nothing wrong, but as a precaution, they have stopped traffic for 100 hundred miles." (Wilson 1983, p17) The Niles' interpretation of Mr. Niles' own health is uncertain.

The uranium, mining, refining, and dumping, sets the tone of this part of New Mexico. It creates the context of the injustice to native peoples. It affects their health, sometimes fatally, which is a part of their injustice.

"Vita: Why would there be a higher rate of birth defects on the reservation than there would be in the rest of the area?

Marion: They live right in the middle of the uranium mines." (Wilson 1983, p 52)

The play offers one of the more balanced portrayals of an individual native American. There is a tendency among environmental writers to idealize the native, such as in Food From Trash. Don, the native, wanted to be a doctor for his people, but he has been offered a well paying job elsewhere and has decided to leave.

In the play, the characters are surrounded and immobile. They are surrounded by the landscape, superficially by the heat, but primarily by the nuclear industry which is a part of the landscape. In the crucible of their experience, something positive emerges in each character. Yet, each is in some way only living day to day when the emergency finally passes. There is no power found to truly change their lives.

This last point is not a criticism of the play, per se. Angels Fall is a well written, thoughtful work. Yet the play would benefit greatly from the dialectic of verse and prose. A more detailed understanding of the science behind the art would allow both audiences and playwrights to find the power to change their lives. For instance, Father Dougherty states "They are trying to install a dump south of here. We're not going to let them get away with that." (Wilson

1983, p 16) I would like to see Mr. Wilson write a sequel to <u>Angels Fall</u> where the residents of New Mexico attempt to stop the dump.

Another use of the dialectic of verse and prose would move from references such as "Chin Rock is a uranium mine." (Wilson 1983, p33), and "Yellow cake is pure uranium, refined at the mill. That's from my protesting days." (Wilson 1983, p 43) to detailed accounts of Chin Rock and uranium refining.

Let Me Hear You Whisper (2)

<u>Let Me Hear You Whisper</u>, by Paul Zindel (1970), is a strange little play. It is definitely about environmental and especially animal rights issues, but it makes its point in a terribly obvious and superficial way.

A laboratory in Manhattan called abadaba (for short) is experimenting on dolphins. The dolphin is kept in a "cramped" (Zindel 1970, p 6) tank. They want to get dolphins to talk so that they can serve human industry, such as herding fish (Zindel 1970, p 31), as well as for military purposes. (Zindel 1970, p 34) Motivated by the sympathetic Helen (the recently hired, aged, sweetly subversive janitor), the dolphin finally finds the courage to speak. And just in time too, because the scientist is going to cut off his head at the end of the experiment. (Zindel 1970, p 22)

The play has no educational value. While I agree with its premise, the characters are either so good, or so obnoxiously evil, that there is no room to think.

Mr. Zindel is usually a fine author, such as in Gamma Rays, but Let Me Hear

You Whisper falls far below the mark. My suspicion is that this play was

whipped off for Earth Day 1970.

Class Two Plays

The Birds (2)

The Birds, by Aristophanes (414 BC), might best be categorized as a

structural or germanic class two work. In other words, it contains plenty of

themes which suggest a proto-environmental consciousness, but there is no

way to prove such. While the material in the play is sufficient to allow

educational linkages to such issues as integrated pest management[36],

Aristophanes would have clearly benefited from a dialectic of verse and prose,

as Mr. Sommerstein suggests[37]. It would be the work of the curriculum

designer to make such links and could not be imputed directly to Aristophanes.

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[36] "The locusts won't eat up their vine-blossoms; one troop of owls and kestrels will crush them. Again, the ants and gall-wasps won't always be eating up their fig-trees; one flock of thrushes will make a clean sweep of the lot of them." (Aristophanes 414 BC, p 83)

[37] "Aristophanes seems to have made a surprising error here. It is true that a species of gall-wasp (Blastophaga psenes) breeds within the female flowers of one form of fig-tree; but far from being a pest, it is the sole pollinating agent for the fig-tree species (Ficus carica) and essential for the production of the best quality fruit, and Greek growers took care to ensure that the wasps had ready access to their cultivated trees (Arist. HA 557b25-31; Thphr. HP 2.8.1-2). Does this slip betray that Ar., a city dweller by descent (as is shown by his membership of the deme Cydathenaeum) and in all probability by upbringing, loved the countryside better than he knew it?" (Sommerstein 1987, p 236)

The play could be produced as Theatre of the Environment, but it would require heavy germanic direction.

The Birds concerns two Athenians who want to escape life in Athens. A contrast is made between the noise/life of the wild (birds) with life in Athens (society). Wild is supposed to be peaceful, and "trouble-free", while "Athenians chirp away at lawsuits all their lives long." (Aristophanes 414 BC, p. 21) Yet, the men who become birds (return to the wild) still need the institutional trappings (servants) of society. (Aristophanes 414 BC, p. 23) Perhaps this is why we are still chirping away at lawsuits in America.

The Chorus-Leader Bird exclaims to Tereus, the blind leader bird, that bringing men to the land of the birds is "the greatest wrong I have known." (Aristophanes 414 BC, p. 53) Depending on how you want to interpret it, The Birds either represents a 'dark' side of nature, or represents a proto-environmental view on the part of Aristophanes in which men are seen as plunderers. Regardless of which side Aristophanes falls with regards to this value judgment, the description fits the classic exploitation model.

In my opinion the value of the play from the perspective of those interested in the Theatre of the Environment, is that it presents the student of theatrical crafts with an excellent structure from which to design a derivative work. In fact, it would be legitimate to create such as work and advertise it as The Birds (so long as the derivative character of the work were acknowledged) because I have found that Greek Comedy often plays better if the topical references are updated.

The Automobile Graveyard (1)

The Automobile Graveyard, by Fernando Arrabal (1960), is notable in that it allegorically presents the garbage of humanity, the perversion of any intention to do "good", against the backdrop of a dump. This dump is all the more remarkable because people live here, in their cars, as if it were a hotel. The play is written in the Absurdist style. Characters reverse personalities for no apparent reason other than that they do. The Automobile Graveyard is similar to Waiting for Godot in its use of senseless violence, unless you accept the dominant system in the play, in which case it does make sense. It is just this purpose that Absurdism seeks to fulfill - to take the audience one remove from their common world, so that they may see it in a new perspective. For instance, one might be able to visualize a dump with all its unpleasantness, but when one is made to feel what it would be like to live in one, one might gain a sense of the petty, "absurd" anger and frustration that such burdens as sleeping with a steering wheel in one's ribs would engender. If everyone had to sleep with a steering wheel in their ribs it might be natural to have police that whip musicians who play for free. This play is Class Two. (Note: the title of this play is sometimes translated as "The Car Cemetery".)

End Game (2)

End Game, by Samuel Beckett (1957), is a play which probably concerns the literal end of the world, possibly by nuclear annihilation. However, this supposition is not proved within the play. In the best germanic tradition, the play is open to, and most probably requires, massive interpretation to make

any sense. It is an excellent play for its portrayal of degenerate relationships and death, but it has only peripheral relation to the environment. As a result, I would judge the play to be Class Two. The play has very little potential for introductory education. However, it could be a valuable discussion generator for a group of students who have some sophistication with environmental issues.

Rose Cottages (4)

Rose Cottages, by Bill Bozzone (1985), is class three theatre of the environment. This classification is based upon one reference. When one of the characters returns from the grocery store without a bag, he replies, "Do you know how many trees are killed each year just to make bags? Thousands! Hundreds of thousands!" (Bozzone 1985, p.41)

Rose Cottages is possibly also class two, specifically with reference to health care. A couple from New Jersey are visiting Florida with the man's mother. They stay for a day at a rundown motel, and decide to abandon the mother there. In an ironic twist, the mother finds a useful role for herself at the motel. The play may have some educational use, keeping in mind that the action is directed but quite uncompleted. Perhaps the play could be used as part of a brainstorming exercise? Even if the play has no educational uses, it is an interesting read.

Another Season's Promise (4)

Another Season's Promise, by Anne Chislett and Keith Roulston (1988), is a class two work. This play is concerned with the lives of a family of farmers in Canada, but they could be farmers anywhere. The play is class two because it deals with the meaning of the people's lives, and not just their doings.

This play deals primarily with the social context of farming, specifically the context of a farmer heading rapidly towards bankruptcy in a community of farmers heading rapidly towards bankruptcy. It deals with the debt the farmers accumulated when they bought the equipment that the banks said they needed, and when they started farming the way the banks said they needed to farm. When the farmers try to organize to save themselves, the banks react by putting more pressure on them, foreclosing faster than they might have otherwise. While the play does not present any answers to a way out of this predatory relationship between the farmers and the banks, it does show the end result. Farmers are forced to sell their land and then rent it back. Because they are renting the land, they are forced to farm in a way which will send "all the topsoil [to] the bottom of Lake Huron and you have to put two bucks worth of fertilizer in for every buck you can hope to take out." (Chislett 1988, p 53).

To be used as educational theatre, Another Season's Promise would need a substantial amount of support material. This would have to include at least material dealing with agricultural economics and sustainable agriculture techniques. What makes Another Season's Promise usable as educational theatre is that it presents a genuine picture of a farm communities' despair

while giving the audience an opening to extended, considered reflection on the cause of that despair.

Foxfire (3)

Foxfire, by Susan Cooper and Hume Cronyn (1983), concerns a family in rural Georgia who must grapple with the conflicting demands of past and present life. To the extent that this play deals with the classic rural-urban dilemma of whether or not to sell out the family farm to developers ("I'm weary of seeing my children march down that hill."(Cooper & Cronyn, p 75)), this play deals with environmental issues. However, the play does not discuss such issues in more than passing. The play is more properly seen as a work of cultural theatre, documenting and portraying life in rural Georgia. As such, I would classify Foxfire as Class Two.

Foxfire is an important play primarily because it derives from a successful and often copied educational program. This program is also referred to by the name Foxfire. It was started by Eliot Wigginton in the Rabun County, Georgia public school where he taught. Students conduct cultural research in the county as an extension of the standard English class. The material collected from this research is then compiled by the students into a magazine.

The only aspect of Foxfire, the play, that surprised me was this. The Foxfire program places a great deal of emphasis on the importance of the students' heritage. Further, part of the emphasis on the students' heritage is a belief that the students, through such emphasis and real learning, can make a viable life in the rural place in which they grew up. Foxfire, the play, on the other hand,

gives the reader the sense that the only way to survive the rural life is to leave it.

As the work by the Peace Child group and others indicate, much of the educational catharsis (or a purging of the unknown) that a play can achieve happens for the cast (just as much of the educational value of a concept map accrues to its creator). Therefore, I would recommend that the students of Rabun Gap take a second look at <u>Foxfire</u>, the play, as well as at their own work so that they might achieve solutions as well as descriptions in their work as well as in their play.

The Road to Mecca (1)

<u>The Road to Mecca</u>, by Athol Fugard (1985), is a class two work in the Theatre of the Environment. Its subject and its background is Miss Helen's house, which she has decorated inside and out with concrete sculptures. The Road to Mecca is within the Theatre of the Environment because the play revolves around the controversy that these sculptures cause among everyone else in the little town of New Bethesda, South Africa. The play is not about urban planning itself. The play focuses on the lives of the people. A strong statement is made between the interior and exterior of one's life. Mr. Fugard's work is, as usual, extremely moving. I have written a derivative play in which two characters in <u>The Road to Mecca</u> argue for and against Miss Helen using real precedents from American case law. This short play is not included in this thesis, but may be obtained upon request.

Barbarians (2)

The context of <u>Barbarians</u>, by Maxim Gorky (circa 1910), is the planning for a railroad that will pass through a small Russian town around 1900. From a modern perspective, one might expect the railroad to represent development, with all of the destruction of the "serene and peaceful landscapes" (Gorky 1910, p 30) that implies. Cherkoon, the radical engineer, views the railroad as a form of "modern communication" (Gorky 1910, p 82), which he hopes will bring new ideas into the town, vitalizing its backward views.

The play is interesting also in that it provides something of a window into early Russian radicalism. A student was expelled from a university for political behavior. (Gorky 1910, p 15) <u>Barbarians</u> presents yet another picture of the bored Russian rural gentry, in the long tradition of Checkov, who many critics admire.

In general, <u>Barbarians</u> is a play which can be referred to as a social commentary play only if it were to be embedded in a rich linked information environment. As it stands, it is overly concerned with love and relationships (not that love and relationships are bad per se).

<u>Barbarians</u> greatest worth, perhaps, would be for the dedicated thespian to read it, and then write a new play juxtaposing negative effects of the transportation industries' construction with its power to bring people together.

As a postscript, <u>Barbarians</u> does have some interesting commentaries on the property relations of relationships, such as being nobody's property, and therefore being at everyone's mercy. (Gorky 1910, p 101) Along these same

lines, one of the outsider characters expresses dismay at men beating their wives. The men from the area think it is just normal. (Gorky 1910, p 81)

Exit the King (2)

While <u>Exit the King</u>, by Eugene Ionesco (1963), could be portrayed as a parable about the demise of civilization, as has been suggested, I believe one would have to twist the play incredibly to come near this result. It is true that there are a number of references to high living resulting in lack of soil conservation towards the beginning of the play (Ionesco 1963, p 14), but most of the play, and numerous evidence within it, suggests that the play is a parable about the death of an individual.

The New Tenant (2)

<u>The New Tenant</u>, by Eugene Ionesco (1958), concerns a man who has so much furniture it has stopped up the whole country. "Some furniture! It's cluttering up the whole country." (Ionesco 1958, p. 114) The two furniture movers somehow manage to get it all put into his apartment. The end result is that the new tenant is completely walled in. This seems to be the way he likes it.

The play itself does not contain any outright condemnation of materialism, but it would not be a far cry to play it this way.

Moon on a Rainbow Shawl (2)

Moon on a Rainbow Shawl, by Errol John (1957), is not really a play about transportation. While there is one character who works for the local transportation system (John 1957, p 20), this is only background information. The play's real concern is education, and the desire of the characters to escape the poverty of their lives.

From a social perspective, this play asks an interesting question about women's rights and duties: does a woman owe a man anything if he gives her presents? Rosa is given presents, unasked, by a wealthy man. She wears them. The man wants to sleep with her. Rosa thinks she doesn't owe him anything. Sophia (an older woman) thinks perhaps she does. (John 1957, p 26)

While it is another quality play about Trinidad, it has nothing much to do with the environment.

Smoke (1)

Smoke, by Laurence Klavan (1983), is a Class Two work. It ties smoking to a wide variety of illusions, self-deceptions, and falsehoods in society: sex, business and the news, to name a few. The play is most notable for its dramatic technique. Al, the main character, is shown going about his day, smoking constantly. He is happy and his life is going fine. In the second movement, Al has given up smoking. He is shown going about exactly the same day as before, but without the smoke. This time everyone says what

they are really thinking. Finally, Al can't take it anymore, so he gives up on not smoking; his illusions are better than his reality.

I am not certain whether <u>Smoke</u> has any educational potential, but is definitely worth a read.

End of the World with Symposium to Follow (1)

<u>End of the World with Symposium to Follow</u>, by Arthur Kopit (1984), is Class Two Theatre of the Environment. It concerns Michael Trent's attempt to write a play about nuclear proliferation, but no deeper connection is drawn. <u>End of the World</u> has been categorized as class two because it contains within itself an attempt to achieve social action through drama.

Discrimination for Everybody! (2)

<u>Discrimination for Everybody!</u>, by Edward Mabley (1947), is a one act adaptation of a radio play. It presents a meeting of the Society for the Prevention of Cruelty to Discriminators. In the meeting, the various economic costs of discrimination are presented, all of which have to be added to the Society's dues. Needless to say, the dues become astronomical.

The play is useful for several reasons. It provides a quick catalog of most of the major types of discrimination. Given that it was written in 1947, it gives an added temporal depth to discussions of contemporary discrimination.

Finally, this play is quite prescient. It claims that "minorities are, so to speak, in the majority." (Mabley 1947, p 10) While this was not strictly true in 1947, in parts of the US, such as California, it is true or nearly true today.

The play also states that "one may be a discriminator and a discriminatee at the same time." (Mabley 1947, p 10) The play suggests, perhaps indirectly, that discrimination is not simply a problem which can be dealt with by making up for the poor, involuntary starting position of the four officially recognized minorities.

In any case, while the play is not directly relevant to the environment, it is worth the time of someone pursuing a similar line of study on what might be termed the Theatre of Civil Rights.

One Bright Day (3)

One Bright Day, by Sigmund Miller (1952), is Class Two work. It concerns a drug company who has discovered that their key product, a pain reliever, contains an ingredient which ordinarily does no harm, but when taken by people with kidney problems can cause infection and death. The general manager uses questionable ethics to ward off a liability suit. In the end, the president of the company decides to take the heroic action of releasing a press release, even if it means the bankruptcy of the company.

While it is true that the ethics of business in general, and drug companies in particular, is a topic which needs to be addressed, One Bright Day is not the last word on this subject. The quality of the writing is not terrible, but it is not

masterful either. The Action of the play seems a little thin; much of the play is spent portraying the social niceties of the company directors and their families. Moreover, the arguments of both the company and the accuser contain logical holes. For instance, the accuser first bases the death of the child on a faulty package, but later says that he was wrong, the package wasn't faulty, instead the product itself is toxic.

In summary, <u>One Bright Day</u> might have made a strong statement in the early 1950's, but today it is dated and tame.

Operation Sidewinder (3)

<u>Operation Sidewinder</u>, by Sam Shepard (1970), is a Class Two work. This play has nothing to do with the environment, unless you count part of a short speech by the Young Man. The play is a window on the social violence and anarchy of the 1960s. As such, it might be useful as part of a cultural study of the 1960s, but other than that I am not sure if it has any educational usefulness. This is not to say that <u>Operation Sidewinder</u> is poorly written, though whether a present day audience would get anything from it is anyone's guess.

A Visit to a Small Planet (2)

<u>A Visit to a Small Planet</u>, by Gore Vidal (1955), is a humorous play about a extra-terrestrial child anthropologist who comes to earth to study it and cause wars and other violent acts. He (Kreton) revels in primitive violence, and feels that his time is boring. The play contains one reference to radioactive fallout

which is indicative of how little people understood about nuclear weapons in 1955. "I wanted those figures on radioactive fallout." (Vidal 1955, p. 161)

The play's most interesting element is summed up when Kreton says to the US general, "You don't like the idea of an outsider playing your game better than you do." (Vidal 1955, p 162) The play has didactic potential (Mr. Vidal states in his forward that he wants to be nosy and tell people what to do) in its projection of our own base tendencies on a supposedly higher being.

Other than this, however, <u>Visit to a Small Planet</u> has nothing much to do with the environment.

Class Three Plays

The Folks Next Door (1)

<u>The Folks Next Door</u>, by John Carroll (1979), is a light play about a family trying to get away from hectic city life and live peacefully in touch with nature. The play has maybe four references that would qualify it as Theatre of the Environment, but it is not directly about the environment. In fact, its attempt at portraying a politically correct family is shallow. The Roberts family only expresses their desire to "live in touch with nature" by moving to the beach. Additionally, the play is highly dated with references to old TV shows and political figures. This play is judged to be Class 3.

Big Sur (1)

Big Sur, by Frank Gagliano (1971), is Class Three Theatre of the Environment. It concerns one Jeremy Chester who drives to California in an attempt to get away from his boring life. He picks up some people. There are a couple of environmental references, but that's about it.

The Madwoman of Chaillot (1)

The Madwoman of Chaillot, by Jean Giraudoux (1947), is Class Three Theatre of the Environment. It concerns some greedy people who have discovered oil beneath Paris, and consequently want to tear Paris up to get at it. It has a few interesting environmental references, but on the whole the 'tear down the city to get at the oil' theme is not worked out fully enough to justify classification as Class One. The play ends with all the greedy people being trapped in the sewers never to be seen again. As a result, the world is happy again.

The play may be a subtle commentary on the urban redevelopment schemes of Haussman and Le Corbusier, but without further investigation there is no way to be certain. The play has some great character parts, and might be usable if only the bias of the play wasn't so simplistic.

A Place on the Magdalena Flats (2)

A Place on the Magdalena Flats, by Preston S. Jones (1975), is a play which takes place in the post WWII depression and drought of 1956. It is a reasonable portrayal of the hardships of the ranching life. It provides a reference to the context of the ecological disaster that the land was in.

"I can remember sittin around the kitchen over to the Sandoval's place and listening to the old timers talk about this country when the native grass was still here. This was fertile country, a country that a man could work on and live. Now... the grit blows into every crack in the house." (Jones 1975, p 7)

Its other two social commentaries are a reference to the inequity of federal crop support programs, and the contradictions of the nuclear bomb program.

"Charlene: [Job] kept his belief and endured [the trials of god].

Carl: He did, but only because he was saddled with the torments of god. If he had to put up with the torments of the United States Government, he wouldn't have lasted a day!" (Jones 1975, p 8) This reference is to the federal programs which pay farmers not to plant crops.

Carl: "Take that damned atom bomb thing. Hell, they didn't drop the first one on the Japanese, they dropped it right over there in Alamogordo." (Jones 1975, p 9)

Unfortunately, this is all the play has to offer. The characters deplore the dusty condition of their land. They hope it will green up again, but no one tries to find management techniques which might make that happen.

The message of the play may be that ignorance is futility. Not much of a message.

The Prisoner of Second Avenue (1)

The Prisoner of Second Avenue, by Neil Simon (1972), is a Class 3 work. It deals incidentally with several environmental issues: solid waste, pollution, and generally with urban living. It is a funny play in its own right, but does not offer any inspiring insights. If one were to do education with this play, one might prepare topic sheets on several of the issues mentioned in the play so that the audience is able to get a stronger feel for the surroundings which impede upon the Edisons' space.

The Plotters of Cabbage Patch Corner (3)

The Plotters of Cabbage Patch Corner, by David Wood (1972), is a class three work. This play has enough relevant material to almost be class one. I ultimately decided to place the play in class three because its picture of positive ecological action is a little inconsistent, and because the author explicitly states that he did not write it as "an ecological tract." (Wood 1972, p. -4)

The play concerns a group of insects who live in a garden. The play begins during a community meeting where the insects are considering whether or not to build an old folks home when they are rudely sprayed with insecticide by the adults (the "big ones"). The rest of the play concerns the insects' attempts to stop the spraying. The community is divided by the relative benefits they

receive from the privileged big ones. The pretty insects (butterfly and lady bug) never get sprayed and so like the big ones. The ugly insects (the slug and maggot) always get sprayed and hate the big ones. (Wood 1972, p 11) Because the pretty insects are better off than the ugly ones, they think that if the ugly insects only "behaved better" (Wood 1972, p 31) and put up with the spraying, things would be fine. The pretty insects are justifying an unjust social order.

Because the insects allowed the maggot, a minor, to vote (I might be tempted to call it a radicalization of the political process by the enfranchisement of the young if I didn't think the author would groan at the suggestion), no majority is achieved. The insects break into two warring factions with the ugly insects trying to destroy the garden to send a message to the big ones that they should stop spraying.

The pretty insects decide to get some advice from the Great Mushroom so that they can stop the destruction of the garden. The Great Mushroom lives in a compost heap which according to Lady Bug is "rather smelly." (Wood 1972, p 16) This is an unfortunate remark because if compost is done properly, it shouldn't smell.

The pretty insects are given a plan which consists of pretending to be the big ones in order to scare away the ugly insects. In the process, the children in the audience are involved, one of the hallmarks of most children's theatre.

Another inconsistency occurs when Glow Worm sings about how his life is "upside down" (Wood 1972, p 30). He claims that "life is ever so hard" because he works at night and sleeps in the day. While this is difficult for humans, it would not likely be the perspective of a real, nocturnal glow worm.

When the ugly insects succeed in destroying the garden, the big ones decide to tear it up and build a garage instead. (Wood 1972, p 53) Finally, the insects all realize that their petty fighting is about to ruin things for everyone, so they obtain a "tin" of fertilizer and some packets of seeds and busily replant the garden. Overnight the garden is restored to its full glory. (Wood 1972, p 55) The big ones conclude that the spray ruined the garden and that the garden came back when they stopped using it, so they decide to not build the garage and never use the spray again. While it is true that wholesale use of pesticide will damage a garden, this conclusion is inconsistent with the process used in the play to arrive at this conclusion because it was the insects that they were trying to get rid of that were intentionally ruining the garden.

Since the author didn't intend for this play to be educational theatre, I suppose it doesn't matter. It will be up to someone else to write a children's play which accurately describes integrated pest management.

Appendix F:

A Catalog of Social Action Theatre Groups

This section uses the same class structure developed for the Play Catalog. Please remember that the class structure is not meant to imply anything about quality of the programs. This section also demonstrates the use of the Pimentel-style literature search format[38].

Class One Programs

Peace Child (1)

Based on an interview with Karen Johnsen of Peace Child/Palo Alto (5/18/90), observation of a rehearsal, and review of Peace Child written materials.

One of the most interesting examples of overlap between theatre, environment, and education that I have uncovered so far is the case of the Peace Child Foundation. David Woollcombe wrote a play called <u>Peace Child</u> in 1981. In this play, two villages separated by a river have been at war for a long

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[38] This format, used by Pr. David Pimentel in his Environmental Policy course, asks students in the class to each research a different topic throughout the course. Summaries of articles are turned in on a regular basis in a standard format which includes the full reference information and an analysis of the article.

time, and one day the river becomes polluted. Each side blames the other. Only by the efforts of two children who had been living each in the other's village did the two villages work together to solve their common problem. Mr. Woollcombe and his supporters have since created an international organization devoted to promoting performances of this play. Local chapters rehearse a new version each year and present the play in their school. With less, but increasing, frequency, children are chosen to do similar work in the context of a citizen's exchange. The foundation began with US-USSR exchanges, but now have run similar projects to many other countries.

The <u>Peace Child</u> play is interesting because, whether its participants realize it or not, they are closely following Brecht's theatrical theory. They openly acknowledge that the rehearsal process is almost more important than the actual performance.

The students spend two weeks learning about the environment or other peace related issues, and then rehearse a modified version of the original <u>Peace Child</u> play, selecting new songs as needed from their growing songbook. In this way, the play becomes primarily an educational experience for the cast themselves. The process may be characterized as having a broad production space because of the two weeks spent learning about the issue in explicit preparation for rehearsals.

Mr. Woollcombe wrote a special version of the <u>Peace Child</u> script for Earth Day 1990 called <u>Earth Child</u>. This play is definitely Class One. I have not been able to review any of the other <u>Peace Child</u> scripts, though I suspect they would be at least Class Two.

Project Eco-Drama (3)

Kleinau, Marion, "Project Eco-Drama -- A Model", Southern Illinois University, Carbondale, Microfiche # ED 196102 (1975). (Note: all page numbers are ERIC page numbers - to get document page numbers, subtract 3, except towards the end of the document where one needs to subtract 4 or 5.)

The author presents a number of "theatrical" activities. (Kleinau 1975, p 19) These activities appear to be mostly in the "Theatre II" mode with an added science veneer, and the occasional shot of Method acting thrown in for good measure, although in this case the Method techniques are used more for script development than anything else. Some of the activities appear to have nothing to do with theatre.

The author's intended end product is reader's theatre, which consists largely as a process of compiling material from a variety of sources, both existing theatre scripts, books, newspaper articles, and statistics (Kleinau 1975, p 53). While this is certainly a legitimate dramatic form for presentation, it presents great problems for disseminating such work to others (i.e. in addition to simply presenting the material to an audience). A number of difficult copyright issues need to be resolved before this kind of multi-source can become more of a reality than a series of references which need to be reconstructed every time someone wants to produce the work. In fact, the author's own article is an example of this problem. A poem which is a critical component in one of her exercises was not reproduced by ERIC in their microfiche because of copyright restrictions. Further, an entire work of reader's theatre was removed.

The author's educational ideas appear to parallel ideas of educational process and epistemology which are emerging independently from other sources. The author feels that "facts alone will not save the environment. It is only when facts affect the attitudinal set of the individual that he is willing to act." (Kleinau 1975, p. 5) This experience supports the contention which I have stated elsewhere that theatre is a valuable, and perhaps necessary, component of a complete environmental education because it can generate the enthusiasm which is a necessary condition for learning. "Further, the [author's] approach is based upon the concept of interrelatedness, both in the universe and in the learning process. So often the educational system seems to compartmentalize concepts and activities. Eco-drama seeks to break down such compartments and see both that communication pervades all of man's activities and that environmental issues affect every aspect of man's life." (Kleinau 1975, p 5) This experience supports the kind of curriculum design I have also used: a design that tries to tie together the fields of knowing which other processes break apart. (Kleinau 1975, p 6)

"Major emphasis in the project was placed upon the learning process rather than upon the product." (Kleinau 1975, p 6) This suggests that the Eco-Drama process was similar to that practiced by the Peace Child productions.

Finally, "the interpretation [i.e. theatre] students have ready access to information which helps to place the affective impact of the script on a reasonably sound factual basis." (Kleinau 1975, p 8) This aspect of the Eco-Drama project answers some of the criticisms I have made of other plays. (Abrams 1991, p 3) However, I can only take the author at her word on this

point because she did not provide any documentation within the text of her plays.

In general, while some of the references in this article are out of date, it is still a good source for a teacher seeking inspiration. I would like to highlight one activity in particular. The exercise "Language" (Kleinau 1975, p 39), which asks students to communicate without speaking, might be adapted to teach environmental racism issues.

The article includes the text of two plays. These plays are reviewed in the Play Catalog.

Class Two Programs

Children of the World: A Multi-Cultural Drama Program (3)

Tabone, Carmine and Albrecht, Robert, "Children of the World: A Multi-Cultural Drama Program", in Youth Theatre Journal, v5 n4 (1991). p 13-16

This article describes a multi-cultural theatre program aimed at children. The method has professional performers provide a context for the children. The children then learn about a selected culture. At the end of the seven week period, the children present the theatre performances they have developed to the other groups of students.

The authors claim that "ethnic prejudice is largely an emotional response to the Babel-like confusion in which we live." (Tabone & Albrecht, p 14) While confusion may explain part of the problem, this is clearly not the sole cause.

Prejudice derives in part from real power disparities in the communities. Clearly this is a touchy subject which may be difficult to raise in a formal school setting (See Anyon 1983).

Appendix G: Syllabi

This section contains syllabi which incorporate the Theatre of the Environment. "The Theatre of the Environment as an Educational Tool" was taught once at Stanford. "Towards Environmental Equity" has not been taught. These syllabi may be used as is or adapted without charge so long as, a) the teacher contacts the author for permission, and b) sends the author the revised syllabus and other materials which may be requested on a case by case basis.

SWOPSI 164: The Theatre of the Environment as an Educational Tool

Instructor: Robert Abrams, Senior, Human Biology

Faculty Sponsors: Pr. David Sutton, Human Biology, and Pr. William Eddelman, Drama.

This course will use pairs of dramas to examine the human element in our Environment. Readings and discussions will focus on The Unintended Consequences of Human Action, The Powers that Be, Protest and the Appropriate Use of Violence, and Cultural Destruction. The technical issues portrayed in the works we will read include deforestation, water pollution, solid waste, Chernobyl, alternative fuels, factory farming, exploitation of indigenous peoples, and recycling.

This course is based on the premise that the Theatre can be used to teach about the environment. We will be examining style of presentation versus accuracy of content in all the works to determine how each play might best be

presented in an educational forum. To this end, students must be prepared to engage the course's theme by looking beyond the literature which serves as our starting point. It is expected that some students will start the course with a more fully developed understanding of either theatre, science, or education. The coursework is designed to draw upon such diverse strengths for the benefit of the whole class.

Pedagogical Approach: This course will be taught fundamentally as a discussion seminar, with several departures. 1) A focusing exercise will be used at the start of each class. Such an exercise might be as simple as holding hands in a circle and passing a pulse in two directions. If people are concentrating, the two pulses will return to the first person at the same time. This exercise will place the class sessions in the mode of a rehearsal, a mode with which I am familiar. Additionally, part of each class period will be used to explore the week's plays by acting out scenes. 2) Students will be asked to read five of the plays in the first week so that they will be able to start the action projects sooner, and will not have as much reading for this course when they have midterms in other classes. 3) Several presentation variations will be used including cold readings[39], reading of a play before examining a supporting curriculum, examining a supporting curriculum before reading the play, performance, Children's Theatre, and others.

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[39] A play read out loud in a group.

Structure of the Course: Each week, except the first and the last four, focus on two plays which provide an interesting comparison one against the other. The plays have been paired to help us shed light on the question of human response posed for that week. In some cases, the technical issues are similar, but even when they aren't, the focus on human response will help us see the connections between technical issues that might not otherwise be immediately apparent. Where appropriate, supplemental readings will be assigned to further illustrate the concept of theatre as education. (See below.) The last 3 to 4 weeks are reserved for final presentations so that each action project group will have at least 1/2 a class period to demonstrate their results.

Course Requirements: Students must develop a bibliography out of which to assign a few short supplemental readings for each play. These might be of a scientific, historical, educational, or journalistic nature. Students must write one 5-15 page paper. Finally, the students must conduct an action project which should consist of writing an educational module for new or existing plays. See below for more suggestions for the action projects.

Class Size is limited to 21.

Course Objectives

A. To understand how the plays which I am calling The Theatre of the Environment are tied together conceptually.

B. To determine how The Theatre of the Environment can be used as science education.

C. To develop materials that expand the Theatre of the Environment in either its theatrical or educational components.

D. To understand the interplay between content and presentation, as well as between accuracy and the affect on the audience.

E. To appreciate the dynamic interaction of the human and technical components of all environmental problems. We will explore the premise that these dynamic interactions make drama as useful a tool for exploring the issues as is science.

Week by week outline

Week 1: Introduction

Required Reading (due this week):

None.

Class Meeting:

Introductions.

Focusing exercise.

In class writing: one paragraph on "What Environment means to me," and one paragraph on "Your background for this course."

Review of course syllabus and action projects.

Cold Reading of <u>Trees</u>, by Israel Horovitz. -- A humorous play about Christmas Trees protesting their fate.

Discussion.

Discussion Questions:

General (for all weeks): Does the play provide a perspective that would have been impossible to achieve before seeing/reading it? What is the information content of the play? How does the play connect daily life with larger scale issues? How does the play connect to your life? What educational approaches would be appropriate for use with this play?

Specific: Comment on the differences between cold readings and reading to oneself. The chopping down of Christmas trees does contribute to deforestation. Argue both sides.

Week 2: The Unintended Consequences of Human Action

Required Reading (due this week):

Enemy of the People, by Henrik Ibsen -- A classic play concerning groundwater pollution in Norway, and the resulting conflict between economic and health interests.

Food From Trash, by Gary Leon Hill -- A fascinating modern play set in a land fill which is in violation of EPA hazardous waste regulations.

Several short scientific articles.

Skim: Sarcophagus, by Vladimir Gubaryev

                  The Water Engine, by David Mamet

                  Cat's Paw, by William Mastrosimone

Class Meeting:

Focusing exercise.

Discuss Enemy of the People, by Henrik Ibsen, and Food From Trash, by Gary Leon Hill

Brief discussion of paper.

Form Action Project Groups.

Discussion Questions:

"The amount of waste produced equals the greatness of the nation." Comment on the above statement. How do economic "necessities" affect human health? What can or should be done in response?

Week 3: The Powers that Be

Required Reading (due this week):

Sarcophagus, by Vladimir Gubaryev -- A dramatization of an isolation hospital after the Chernobyl disaster, written by the Science Editor of Pravda.

The Water Engine, by David Mamet -- A drama of one man's attempt to make a good idea reality, and corporate interests attempt to subvert it.

Skim: Feedlot, by Patrick Meyers

Class Meeting:

Focusing exercise.

Discuss Sarcophagus, by Vladimir Gubaryev

The Water Engine, by David Mamet

Discussion Questions:

Comment on Bess', a well-studied victim of radiation in Sarcophagus, triple role as himself, a press conference, and a research paper topic. What is the difference between War and Accident? Are the symptoms portrayed accurate? Comment on the distancing effects used in the two plays. What is the role of the 'voice of reason' in a crisis? Compare and contrast the Inventor in the Water Engine with the Physicist in Sarcophagus. Does the Water Engine have an ending? Compare the effect of large capital and large bureaucracy on humanitarian efforts? Do you think that with reference to the environment, these two radically different social systems produce the same results?

Week 4: Protest and the Appropriate Use of Violence

Required Reading (due this week):

Cat's Paw, by William Mastrosimone -- One man's belief in Violence to achieve good ends leads him to hold an EPA official hostage until groundwater contamination is solved.

Feedlot, by Patrick Meyers -- A portrayal of factory farming, and a college student's attempt to starve the cows as a protest.

Skim: Savages, by Christopher Hampton

Class Meeting:

Focusing exercise.

Discuss <u>Cat's Paw</u>, by William Mastrosimone

<u>Feedlot</u>, by Patrick Meyers

Discussion Questions:

In <u>Cat's Paw</u>, how are both Victor, the urban guerrilla, and Jessica, the TV reporter, guilty of overdressing their work? Do they exaggerate their claims just to get media attention? Comment on the statement "There is no more time to write our Congressman." Is the following statement true of the EPA? "When you fail to clean up the water, you clean up the language." Is it ethical to organize a hunger strike for someone else, even if that someone else is a herd of cattle? Comment on the parallels between rape and murder of cows and humans. Is it better to make grand protests, or is it better to forgo such grandstanding in favour of honest communication with other individuals?

Week 5: Cultural Destruction

Required Reading (due this week):

<u>Savages</u>, by Christopher Hampton -- A naturalistic drama which exposes the corruption of the agencies which are charged with protecting rainforests and their native peoples.

<u>Indians</u>, by Arthur Kopit -- A more theatrical portrayal of the injustices imposed upon Native American Indians and the ecosystems of which they were an integral part.

<u>Meetings,</u> by Mustapha Matura -- A story of cigarettes and down home cooking.

Skim: <u>The Treasure Makers</u>, by Patricia Sternberg

Class Meeting:

Focusing exercise.

Discuss <u>Savages</u>, by Christopher Hampton

<u>Indians</u>, by Arthur Kopit

Discussion Questions:

Comment on the statement "Ecosystems need active human intervention." Contrast the real West with the West that Bill Cody displayed in his Wild West shows. Various treaties promised the native peoples land or other benefits in perpetuity. Is the concept of perpetuity viable or ridiculous? Which approach is more effective, the naturalistic <u>Savages</u>, or the more abstract <u>Indians</u>? Are natural resources being opened up for the people or for the big landholders? Compare and contrast the form of cultural destruction in the first two plays and <u>Meetings.</u>

Week 6: Children's Theatre

Required Reading (due this week):

<u>The Treasure Makers</u>, by Patricia Sternberg

Class Meeting:

Focusing exercise.

Discuss <u>The Treasure Makers</u>, by Patricia Sternberg -- An interactive children's musical in which a recycling center is threatened with losing its lease, but is saved in the end by a "Trash Sculpture Art Contest."

Discussion Questions:

How does the presentation and content of children's theatre differ from the other plays we have read? Is an interactive play better for education than a traditional play in which the audience only watches? Are there principles that can be learned from Children's Theatre that can be applied to theatre as education for adults?

Week 7: Final Presentations

Required Reading (due this week):

Optional assignments from Group 1 and 2.

Class Meeting:

Focusing exercise.

Final Presentations, Group 1 and 2.

Discussion Questions:

To be supplied by Group 1 and 2.

Week 8: Final Presentations

Required Reading (due this week):

Optional assignments by Group 3 and 4.

Class Meeting:

Focusing exercise.

Final Presentations, Group 3 and 4.

Discussion Questions:

To be supplied by Group 3 and 4.

Week 9: Final Presentations

Required Reading (due this week):

Optional assignments by Group 5 and 6.

Class Meeting:

Focusing exercise.

Final Presentations, Group 5 and 6.

Discussion Questions:

To be supplied by Group 5 and 6.

Week 10: Final Presentation/Wrap-up

Required Reading (due this week):

Optional assignments by Group 7.

Class Meeting:

Focusing exercise.

Final Presentation Group 7.

Wrap-up discussion.

Discussion Questions:

To be supplied by Group 7.

Course Requirements

One 5-15 page paper, and an action project are required for this course.

1. The paper is to evaluate at least three works. These may be works read in class or other works. A list of 100+ other works that are relevant to The Theatre of the Environment will be supplied. This paper must demonstrate significant understanding of the Theatre of the Environment. Given the interdisciplinary nature of this course, students should not feel restricted to a particular essay format. Some possible formats include pure literary critique, evaluation of Lehrstuek potential of the plays, to comparing the Action within the play to real cases. Six plays will have been read by week two so that students will be able to begin working on the paper early. This will also relieve some pressure from the end of the quarter.

Evaluation

This class is offered on a Pass/No Clue basis only. Graded components will be the following:

Paper = 30%

Action Project = 40%

Class Participation = 30%

Action Projects

Students will work in Teams of 2 to 4. These teams will be determined by assessing who is interested in which sub-topics. Every attempt will be made to ensure that all students are pursuing research topics which appeal to them. Four possible action projects are listed below, though other ideas that relate to the theme of the course will certainly arise.

1. Develop an educational module around an existing play.

2. Write a play that addresses an environmental issue, preferably one not covered in the 11 plays read for class. This option requires the student to do significant research to obtain the material from which to base the creative process.

3. Work in a larger group to simultaneously do a linked version of options 1 and 2 above.

4. Stage a performance of a play.

Educational modules may be presented as Hypertext (eg. a HyperCard stack), rather than as linear paper based curricula. In this case, the students are also required to submit a short description of their work. All groups will be

required to field test their projects twice, once as a final presentation, and again outside the class. The "field test" will vary depending on the nature of the action project, but must include presentation of the project to some people outside of the class.

Towards Environmental Equity

A syllabus

Rationale

This course is based on the premise that humans play a necessary role in our planet's ecology. The survival and the flourishing of our home depends upon our balancing that role with an understanding of the larger pattern.

[Note: please see the section in this thesis on Environmental Justice for more additional rationale.]

Pedagogy

While I do know much about the environment and a fair amount about environmental equity, I will readily admit that I do not know everything. I see my courses as cooperative efforts where students take ownership of their own work. In exchange, I expect my students to make a sincere effort to expand their own understanding and to expand the state of the field to the best of their abilities.

Theatre is a useful starting point for a discussion of an issue such as environmental equity, an issue which is new and ill-defined, because theatre can present an idea intact. Other forms of discourse often present ideas stripped of their native paradox and contradiction. As a medium, theatre is useful because it appeals to all of the senses and is therefore more likely to be accessible to more people. Theatre is an endeavor which can only succeed through the cooperation of people with differing talents. The use of the theatre

may be able to offset the often conflictive nature of issues such as environmental equity.

The theatre can stimulate people's interest, but its ability to convey large quantities of detailed information is poor. If we are to solve our planet's problems, and not just talk about them, we need a complete set of understandings. Science must complement theatre.

We must create an educational process in which we can move from reflection to investigation and back again.

The units in this course have been primarily organized around the strengths of the instructional foci.

The Sustainable Development unit is placed first because Meetings is the best available example of the course's central idea. The Toxic Waste unit has been placed last because I want to anchor the course with Enemy of the People, the strongest play in the Theatre of the Environment. These criteria force the "image" units to be placed in the middle of the course. The Environment as Racial Allegory unit was placed at the end of this sub-sequence because I feel that its plays are weaker than the preceding set. In some sense this weakness is an asset because it will make it easier for students to create their own plays of this type.

In general, the units are not particularly dependent upon each other. While students would benefit from participating in all of the units, they would not have to do so to benefit from any one unit. This independence would be an asset if the course were taught in a non-formal context where participant continuity couldn't be guaranteed.

Intended Learning Outcomes (ILOs)

(sub-ILOs are suggestions only)

1) Develop an understanding of Environmental Racism/Environmental Equity.

(The point of these ILOs is to make sure that the student learns something of the content of Environmental Equity. However, given the organization of the course, it would be inappropriate to specify exactly what content should be learned.)

A) Demonstrate an understanding of the process of siting waste dumps.

B) Demonstrate an understanding of the history of both the environmental and social justice movements.

C) Demonstrate an understanding of the relationships between natural and human communities.

D) The student should be able to discuss the consumption of meat without attacking other people's viewpoints.

E) The student should become aware of the potential, unintended side effects of their actions, especially in terms of how their actions might be perceived by people of different cultures.

F) The students should try to find positive actions which could bring differing communities together.

2) Demonstrate an ability to integrate different media, at least as a group.

(The point of these ILOs is to emphasize the many different media that can be used to find and convey ideas. I want to suggest that it would be important to have facility with several media. However, since I am not "teaching" specific media skills in this course - theatre skills alone are too

diverse to fit into one course - I am only suggesting objectives students could choose to incorporate into the work they do in the class.)

A) The student should improve their facility with at least one aspect of the theatre.

B) Students should improve their ability to use a variety of information gathering tools, such as the Mann Library Gateway, Econet, and interviewing.

C) The student should be able to produce a synthesis of the concepts and material found in the course and material they may find elsewhere in an original work which expands the resource base of the course itself.

Teaching Strategies

Week Specific:

In each of the first four weeks, two or three plays will be assigned. Where possible, specific support readings will also be assigned. Students will sign up to be responsible for creating additional discussion questions. Both my discussion questions and student generated questions will be used as touchstones to reenergize the group as discussion threads peter out. They could also be used by students who are looking for paper or project topics. When possible, guest discussants with expertise on the specific issue of the week will be invited to join the class meetings. Class meetings will generally consist of discussions facilitated by me, though meeting roles could be rotated. The more I think about this course, the more it starts to look like a decision-directed cooperative with itself as a client than a free discussion class. Whether it is better, or even feasible, to explicitly run a class as a cooperative is not a question I am able to answer without pilot testing.

The remaining weeks of the course will be used for project work and additional reflection on the plays.

I will try to present one out-of-your-seat theatrical exercise each week.

For the sake of specificity, I have chosen a course format of 2 two-hour classes per week. Some of the teaching strategies may need to be modified if a different format is used.

Course Long:

Students must demonstrate their understanding by writing one paper which draws upon the material assigned for the course. "Paper" is defined loosely, but it must be a written document.

Students must undertake a project which will be added to the corpus of the Theatre of the Environment. This project can be a substantial research paper, but it can also be non-text in nature. Students may work in groups on the project.

Each student should pick a topic that relates to Environmental Equity and conduct an on-going literature search throughout the course. The student should ideally pick a topic which relates to one or more of her projects. All articles of interest should be written up and submitted weekly in a Pimentel-style format (i.e. Standard full citation, summary of article, and points of note). The student should develop some expertise in the chosen topic which other class members can draw upon.

Note: The week by week teaching strategies outlined in the "Weekly Units with Discussion Questions" section has been designed for a 10 week quarter as a 5 quarter unit course. The same material could be taught for a 15 week semester as a 4 semester unit course by shortening the class periods, adding more class periods, and adding 20 hours of out of class work.

Process notes: Formal meetings almost never combine the roles of facilitator and notetaker in one person. Therefore, if I could run an ideal course, I could use a TA as a notetaker so that I could concentrate on facilitating.

Weekly Units with Discussion Questions

Unit 0: Introduction

Class 0 A)

> Meeting Roles.
>
> Facilitator: PROF
>
> Minutes: TA

Time   Timekeeper:

15 min   1] I will introduce concepts of environmental equity and environmental racism briefly.

15 min   2] I will present the process concept of art/reflection -> science/investigation -> art/reflection.

30 min   3] Personal introductions. Why are people here?

30 min   4] Cold reading of The Play That Hasn't Been Written, by Mwandishi Mustapha Nzuri (1993). {I need a short play, probably a one-act which directly discusses environmental equity/racism without too much linguistic complexity. For example, Meetings is too indirect, and would take more sophistication on the part of the audience than I can count on to avoid turning the dialect based dialog into a caricature. Trees, which I used as the starter the last time I taught The Theatre of the Environment is the right length,

but the format is too quirky to be representative of the body of work I am presenting.

    30 min   5] Media Shock: I will introduce students to the Mann Library Gateway and other tools which are useful to the Literature Search assignment. [It would greatly help matters if the "classroom" had an active phone line, or a network connection.}

          Unit 1: Sustainable Development

    Read <u>Meetings</u> by Mustapha Matura

    Read <u>Feedlot</u> by Patrick Meyers

    Read <u>Toronto at Dreamer's Rock</u> by Theatre Direct

    We all live in communities in which we must make choices. Do we embrace our heritage or the modern world? Is there a third choice? What is development? Do we mean by development "bigger is better" or "organic maturation"? Whose image are we seeking? What does the word sustainable mean? Over what period of time? For whom? All of these questions must be answered in the context of the management of consumptive resources and the management of generative resources. One way to answer these questions is to ask "What do we eat?".

    Class 1 A)

        Meeting Roles.

        Facilitator: PROF

        Minutes: TA

        Discussion Questions: Meetings _____,

Intro to RIEH _____.

Time   Timekeeper:

         Readings Due: <u>Meetings</u>, "Introduction" to RIEH

         Writing Due:

         Marginal Out of Class Time Required: 2 hours.

60 min   1] Discuss <u>Meetings</u>. Whole Group. Free form discussion.

60 min   2] I will answer questions about course requirements. The class will then generate additional project ideas, and generate a list of literature search focus areas. Areas will be assigned in 1A or by 1B.

Homework 1A: Write a short piece in any format expressing what you already understand about the issues this course is trying to address and/or what you think you want/need to know.

Class 1 B)

         Meeting Roles.

         Facilitator: PROF

         Minutes: TA

         Discussion Questions: Feedlot _____.

Time   Timekeeper:

         Readings Due: <u>Feedlot</u>

         Writing Due: Homework 1A.

         Marginal Out of Class Time Required: 2 hours.

40 min   1] Discuss <u>Feedlot</u>. Whole group.

30 min   2] Food as Media: A vegetarian cook will be a guest discussant with edible samples.

25 min   3] Break up into small groups to discuss Homework 1A.

15 min   4] Report out summaries of small group discussions to whole group.

05 min   5] Assign Literature Search topics if not dealt with in 1A. Assign all readings in RIEH, except Intro and Rio Puerco.

Homework 1B: Prepare written summary of your RIEH article.

Class 1 C)

> Meeting Roles.
>
> Facilitator:
>
> Minutes:

Time   Timekeeper:

> Readings Due: RIEH articles
>
> Writing Due: Homework 1B, Literature Search
>
> Marginal Out of Class Time Required: 3 hours.

50 min   1] Students will present 5 min summaries of articles to whole group.

30 min   2] Small group discussion of articles.

30 min   3] Media exercise: I will present concept mapping.

10 min   4] Deal with Logistics, if any.

Homework 1C: Concept map 1 or more RIEH articles using at least 10 concepts.

Class 1 D)

> Meeting Roles.
>
> Facilitator:
>
> Minutes:

Time   Timekeeper:

> Readings Due:

Writing Due: Homework 1C, Literature Search.

Marginal Out of Class Time Required: 3 hours.

40 min   1] Students present concept maps in small groups.

20 min   2] Report out to full group.

60 min   3] Discuss "Who would need to know Environmental Equity related info? What might be the most appropriate mix of media to deliver the message?"

Unit 2: The Environmental Myth of the Native American

Read <u>Toronto at Dreamer's Rock</u> by Theatre Direct

Read <u>Food From Trash</u> by Gary Leon Hill

Read <u>Angels Fall</u> by Lanford Wilson

Environmentalists often have two favorite myths: the myth of the clean techno-fix, and the myth of the golden age of indigenous peoples. This section will examine the second myth. While it is true that indigenous peoples live more in harmony with their environment than their "civilized" counterparts, is it true, or even useful to view indigenous peoples as uniformly moral? Can environmentalists use the images of indigenous peoples without taking concrete action on their present, generally oppressed, state? This section contrasts an idealized view of a Native American, with a more realistic less flattering view, with the visionary self-image presented in <u>Toronto at Dreamer's Rock</u>.

Class 2 A)

Meeting Roles.

Facilitator:

Minutes:

Time   Timekeeper:

        Readings Due:

        Writing Due: Literature Search.

        Marginal Out of Class Time Required: 2 hours

120 min   1] See production of <u>Toronto at Dreamer's Rock</u>. If any time is left at the end of the performance, discuss play with cast. {I would need Theatre Arts to get Theatre Direct as artists in residence.}

Class 2 B)

        Meeting Roles.

        Facilitator:

        Minutes:

        Discussion Questions: Angels Fall _____,

                         Food From Trash _____.

Time   Timekeeper:

        Readings Due: <u>Angels Fall</u> and <u>Food from Trash</u>

        Writing Due: Literature Search.

        Marginal Out of Class Time Required: 4 hours.

120 min   1] Continue discussion with Theatre Direct cast, bringing in <u>Angels Fall</u> and <u>Food from Trash</u>.

Class 2 C)

        Meeting Roles.

        Facilitator:

        Minutes:

Time   Timekeeper:

        Readings Due:

        Writing Due: Rough Draft of 1st paper, Literature Search.

Marginal Out of Class Time Required: 12 hours

30 min   1] Report on Literature Search to whole group.

30 min   2] Discuss drafts of 1st paper in small groups.

30 min   3] Report out to whole group.

30 min   4] Discuss potential projects.

Homework 2C: Write short "scenes" to be presented in class.

Unit 3: Environment as Racial Allegory - The Portrayal of African-Americans

 Read <u>Trees</u> by Isreal Horovitz

 Read <u>Alligator Man</u> by Jack A. Kaplan

The two plays in this section both attempt to use environmental issues as a stage on which to make a point about racial conflict between African-Americans and others. Does this idea work? Are the portrayals honest? If you were to write an allegorical play about your own community, what would it look like?

Class 3 A)

Meeting Roles.

Facilitator:

Minutes:

Discussion Questions: Trees _____, Alligator Man _____.

Time   Timekeeper:

Readings Due: <u>Trees</u> and <u>Alligator Man</u>

Writing Due: Homework 2C, Literature Search.

Marginal Out of Class Time Required: 5 hours

60 min   1] Discuss <u>Trees</u> and <u>Alligator Man</u> in whole group.

60 min   2] Students will present Scenes to whole group.

Class 3 B)

      Meeting Roles.

      Facilitator:

      Minutes:

Time   Timekeeper:

      Readings Due:

      Writing Due: Literature Search.

      Marginal Out of Class Time Required: 2 hours

90 min   1] Small group work on projects.

30 min   2] Media: Hypertext systems.

Unit 4: Toxic Waste and other Uncontained Pollutants

Read <u>Food From Trash</u> by Gary Leon Hill

Read <u>Angels Fall</u> by Lanford Wilson

Read <u>Enemy of the People</u> by Henrick Ibsen

Support Readings:

"Uranium Production and Its Effects on Navajo Communities Along the Rio Puerco in Western New Mexico", Wm Paul Robinson, in <u>Race and the Incidence of Environmental Hazards: A time for discourse</u>, Bryant B and Mohai P, eds., Westview 1992, p 153.

A key concern within environmental racism is that of the placement of waste dumps and other pollution sites. Pollution is often dumped on disadvantaged communities because they do not have the resources to organize and oppose it, because the pollution sites are sold as jobs measures without a full accounting of the uncompensated health affects such sites will

cause, or because some people assume that historically disadvantaged people are that way because they somehow deserve their fate and that therefore placing dumps in their communities is appropriate. The plays in this section deal with a waste dump, a uranium mine, and a factory respectively. The plays include some of the newest and the oldest play in the Theatre of the Environment. The plays show us that the tyranny of circumstance transcends peoples and generations.

Class 4 A)

Meeting Roles.

Facilitator:

Minutes:

Discussion Questions: Enemy of the People _____,

Rio Puerco/Angels Fall _____.

Time   Timekeeper:

Readings Due: <u>Enemy of the People</u> and <u>Angels Fall</u> and "Rio Puerco" in RIEH.

Writing Due: Literature Search.

Marginal Out of Class Time Required: 5 hours

120 min   1] Discuss <u>Enemy of the People</u> and <u>Angels Fall</u> and "Rio Puerco" with guest discussant. Whole group.

Class 4 B)

Meeting Roles.

Facilitator:

Minutes:

Time   Timekeeper:

Readings Due:

Writing Due: Literature Search.

Marginal Out of Class Time Required: 2 hours

120 min   1] Small group work on Projects.

Class 4 C)

Meeting Roles.

Facilitator:

Minutes:

Time   Timekeeper:

Readings Due:

Writing Due: Literature Search

Marginal Out of Class Time Required: 2 hours

120 min   1] Small group work on Projects.

Class 4 D)

Meeting Roles.

Facilitator:

Minutes:

Time   Timekeeper:

Readings Due:

Writing Due: Literature Search.

Marginal Out of Class Time Required: 2 hours.

120 min   1] Small group work on Projects.

Unit 5: Work in Progress Presentations

What many of the plays in this course do not do is show us the way to a more just future. If you are willing to bring an openness to listen, and an

openness to act to the discussions which will arise during this course, we will move closer to finding such a way.

Class 5 A)

   Meeting Roles.

   Facilitator:

   Minutes:

Time Timekeeper:

   Readings Due: Student Assigned Readings.

   Writing Due: Literature Search.

   Marginal Out of Class Time Required: 3 hours.

120 min 1] Each group should present readings and discussion questions. How you want to use the time is up to you. Time allotted to each group depends on how many groups there are.

Class 5 B)

   Meeting Roles.

   Facilitator:

   Minutes:

Time Timekeeper:

   Readings Due: Student Assigned Readings.

   Writing Due: Literature Search.

   Marginal Out of Class Time Required: 3 hours

120 min 1] Each group should present readings and discussion questions. How you want to use the time is up to you. Time allotted to each group depends on how many groups there are.

Class 5 C)

   Meeting Roles.

Facilitator:

Minutes:

Time   Timekeeper:

Readings Due: Student Assigned Readings

Writing Due: Literature Search.

Marginal Out of Class Time Required: 3 hours

120 min   1] Each group should present readings and discussion questions. How you want to use the time is up to you. Time allotted to each group depends on how many groups there are.

Class 5 D)

Meeting Roles.

Facilitator:

Minutes:

Time   Timekeeper:

Readings Due: Student Assigned Readings

Writing Due: Literature Search

Marginal Out of Class Time Required: 3 hours

120 min   1] Each group should present readings and discussion questions. How you want to use the time is up to you. Time allotted to each group depends on how many groups there are.

Homework 5D: Write up your reflections before you get to class, not necessarily to hand in.

Unit 6: Wrap Up Reflections.

How did the course go? Try to return to the early readings and connect them to themes discussed later in the course. What have we learned? How

could the course be improved? If anyone is interested in pursuing work on environmental equity/racism or the Theatre of the Environment further, what next steps do you recommend?

Class 6 A)

           Meeting Roles.

           Facilitator: PROF

           Minutes: TA

Time   Timekeeper:

           Readings Due:

           Writing Due: Homework 5D.

           Marginal Out of Class Time Required: 1 hour

120 min   1] Reflect on the course in whole group.

Class 6 B) More Wrap Up (with food).

           Meeting Roles.

           Facilitator: PROF

Time   Shopping and Food Prep: _____, _____,

                                      _____.

           Readings Due:

           Writing Due: Final draft of Paper, Final draft of Project.

           Marginal Out of Class Time Required: 41 hours

           Total Out of Class Time Required: 100 hours

120 min   1] Reflect on the course in whole group. Don't eat with your mouth full.

The Toolkit

Some of the tools in this section are used in this course. Some of them are not. They are provided to give others a head start should they wish or need to modify the course to fit their own particular circumstances.

General Support Readings

RIEH = <u>Race and the Incidence of Environmental Hazards: A time for discourse</u>, Bryant B and Mohai P, eds., Westview 1992

"Principles of Environmental Justice", from People of Color Environmental Leadership Summit, Washington DC, October 27, 1991.

[This section used to list the various editions of the Theatre of the Environment, which is no longer necessary as they are incorporated into this thesis.]

The Plays

Nzuri, Mwandishi Mustapha, <u>The Play That Hasn't Been Written</u>, Phantom Press (1993).

Matura, Mustapha, <u>Meetings</u>, Methuen (1982).

Meyers, Patrick, <u>Feedlot</u>, Dramatists Play Service (1977).

Theatre Direct, <u>Toronto at Dreamer's Rock</u>, Theatre Direct (199?).

Hill, Gary Leon, <u>Food From Trash</u>, Theatre Communications Group (1983).

Wilson, Lanford, <u>Angels Fall</u>, Hill and Wang (1983).

Horovitz, Isreal, <u>Trees</u>, Dramatists Play Service (1970).

Kaplan, Jack A., <u>Alligator Man</u>, Dramatists Play Service (1974).

Ibsen, Henrick, <u>Enemy of the People</u>, Dramatists Play Service/Arthur Miller (1882).

Bibliography

<u>The Merriam-Webster Dictionary</u>, Pocket Books (1974).

Pimentel, David, "Pimentel-style literature review," Personal Communication (1992).

Abrams, Judith, "Experience Derived Suggestions for Course Evaluation," Personal Communication (12/10/92).

Gilbert, Michael, "Experience Derived Suggestions for Course Evaluation," Personal Communication (12/10/92).

ASCD = Joan L. Herman, Pamela R. Aschbacher, Lynn Winters, "A practical guide to alternative assessment", Association for Supervision and Curriculum Development (1992).

Theatre and "Media" Activities

Scene exchange.

Concept Mapping.

Correspondence art - text to illustration to text

Electronic communication and databases - Econet, Internet, Mann Library Gateway.

Generative Questions and Other Project Ideas
(in no particular order)

How do cultural attitudes towards "cleanliness" differ?

What defines "home"?

Write a play about how "Martin Luther King gave his life to improve the quality of life of the garbage workers in Memphis, Tennessee." (RIEH, Bryant and Mohai, 1992, p 7)

Discuss transcendental experiences in African-American and other People of Color cultures. See RIEH, Taylor, 1992, p 34.

Could guns be controlled in the inner cities by controlling pollution at gun plants?

More Ideas for Action Projects

1) Nutrition: In Meetings, the conflict over development is paralleled and symbolized by a conflict over food choices. This action project has two parts.

1 A) First, you should conduct a dietary self study. Materials for this 3 day self analysis will be provided. You will need a small kitchen scale. You will be recording the masses of everything you eat for three days, as well as analyzing the nutritional values of each of the component foods. Next, choose one of the projects listed under 1 B.

1 B i) Second, you should construct an "indigenous diet" from locally available foods. This diet should resemble the indigenous diet mentioned in Meetings in style, though not necessarily in terms of the same specific foods. Do a comparison of the nutritional value of your "indigenous diet" to the style of "western" diet mentioned in Meetings. Note: If you don't want to fabricate an indigenous diet, you can explore the traditional diet of your own culture and compare that to the "western diet."

1 B ii) Write a report on the ecology of one of the native foods described in Meetings.

2) Ethics in Business: In _Meetings_, both main characters are involved in a variety of business dealings (not the least of which, of course, is their endless meetings). To some extent, the characters' ethics, both positive and negative, that they bring to these dealings forms the heart of this play's thrust.

2 A) Find a partner. Each person should write up a series of scenarios of dilemmas (ethical or otherwise) you might face if you were a business person in your own community. Exchange your scenarios with your partner. Write a thoughtful response to each scenario. Repeat the process several times. Next, take the 10 best scenarios and discuss them with several local business people. Finally, write up a summary of your current ideas based on your work with your partner and your interviews.

2 B) With your partner, or with a group of partners, come up with a product or a service that your community might want or need. Analyze both the practical and the ethical dimensions of your proposed product. A detailed plan or prospectus for this product, including market surveys and other preparatory work, will be sufficient to complete this assignment. Implementing the product could start within the time frame of this course, but it is not necessary to do so. Also, your plan can recommend that the group NOT implement the product.

Evaluation

Individual evaluation:

Students will be graded in approximately equal parts on their class participation, homework, literature review, paper and project. If I teach the class, I would probably make the course a mandatory Pass/No Credit, but it

could be Letter graded. Regardless of which grading system is used, I have created a set of assignment scoring rubrics to make grading easier and more fair.

Class Participation:

Class Attendance:

 This does not include absences for which a student has a good reason and has informed me ahead of time.

0 = 0-25%

1 = 25.1-50%

2 = 50.1-75%

3 = 75.1-100%

Meeting Roles:

 To earn a meet role credit, a student must complete the task up to a reasonable standard, taking into account that this course does not intend to expressly teach skills such as facilitation. This rubric is mostly concerned with sincere effort.

0 = 0-2 roles

1 = 3-5 roles

2 = 6-8 roles

3 = 9 or more roles

Homework

Assign .5 point for each assignment completed late without a good reason.

Assign 1 point for each assignment completed on time.

Literature Search

Discovering good references requires a combination of skilled detective work and luck. Therefore, while volume (number) of references is the easiest criteria to measure, other criteria will try to offset this. In other words, quality of the references, quality of the reports on the references, and search effort as measured by the number of source types also count. Dead Week (also sometimes known as Reading Week) and exam week are not used to compute weekly averages.

Number of References:

0 = Average # of References/Week = 0-0.9

1 = Average # of References/Week = 1-2.9

2 = Average # of References/Week = 3-4.9

3 = Average # of References/Week = 5 or more

Types of References and Sources:

This includes # of different journals and other sources (not necessarily written sources). It also includes the # of different search methods used. If you think sources are of different types, and you think that I might not agree, please justify why they are different.

0 = 0-2 types

1 = 3-5 types

2 = 5-8 types

3 = 9 or more types

Quality of References:

Score one point for each of the following criteria, and then compute the percentage of points scored relative to the total number of possible points (i.e. number of references * 3). a] Proper full citation. b] Summary of article and key points or ideas the article suggests. c] The reference is relevant to the

student's project, to another student's project, or represents a new idea the student is pursuing.

0 = 40% or less, OR # of references = "0"

1 = 40.1-60%

2 = 60.1-80%

3 = 80.1-100%

Paper

Concept Development:

Assign one point for each of the following items contained in the paper and then check this point score against the Concept Development rubric. a] Contains statement of concepts from readings (or other sources) which the student didn't understand and/or arguments the student didn't agree with. b] Demonstrates improved understanding of these concepts and/or thoughtful counterarguments. c] Uses assigned material. d] Integrates multiple sources. e] Crosses media type boundaries (art-science, text-drawing, etc.). f] The consequences of the student's ideas are considered.

0 = contains 0-1 components

1 = contains 2-3 components

2 = contains 4-5 components

3 = contains all 6 components

Organization:

0 = no organization, "statements tend to wander or ramble" (ASCD)

1 = minimal organization

2 = average organization

3 = exceptional organization, main ideas are clearly stated and are supported by evidence, connections between ideas are illuminated.

Clarity of Concepts:

0 = concepts not mentioned or not defined.

1 = gist of concepts can be gleaned from context, but meanings potentially unclear or confusing.

2 = clear, basic definitions and demonstrated understanding of the concepts in context.

3 = includes "2", plus some discussion of conceptual nuances, how others might use the same concepts/words differently, reasons for creating new concepts or using old concepts in new ways (if applicable).

Project

Methodology section:

While a methodology section is not standard outside of scientific research papers (and even there sometimes authors forget to include it), I expect all papers written for the project to contain a methods section, for two reasons. I want you to reflect on your process, and I want the readers of your paper to be able to repeat your study should they choose to do so. If you include a methods section in the "paper", it would be nice, but I am not going to formally grade it there.

0 = no methods described

1 = methods described, but only in brief sketchy form

2 = methods described in sufficient detail

3 = methods described in sufficient detail, and student reflects on methods, such as sources of error, logistical constraints, how methods might be improved, and other such matters.

Concept Development:

For the Project, use the Concept Development rubric used for the Paper, except that item c should be replaced with "student makes convincing argument why her work is a useful addition to the corpus."

Main Effects:

There are several questions which I need to answer in order to know whether the course itself was successful, independent of the success of individual students. These questions were derived both from reflecting on my rationale, as well as from surveying two long time teachers whose work I am familiar with.

1) Have I deeply inspired one student?

2) Are all of the work products which meet the standards I have set also "quality products" which are worth reading? If the answer is yes, the course was successful. If the answer was no, I either need to revise my individual evaluation measures, or I need to change some other aspect of how I teach the course.

3) Are the students work products at least indirectly useful for the purpose of bringing new material, perspectives or methods into the course?

4) Were the students enthusiastic during the learning process?

5) What was my gut reaction to how the course went?

6) Questions to ask the students:

a) What did they think they would get from the course and what did they actually get?

b) What about the curriculum was good or bad and why?

c) Did I present the material as well as I could? If not, why not?

d) Did the structure and organization of the course enhance or detract from your learning? Why?

7) Did the students parrot the material back to me or develop their own insights?

8) If possible, I should have a colleague I respect sit in on at least three classes and give me feedback.

Side Effects:

Does the emphasis on theatre deter science majors from taking the course? Are the students achieving meaningful learning, and not just acting as unpaid research assistants? Would explicitly running the class as a cooperative resolve this potential conflict of interest? While I feel much more confident about the prospect of grading individual students now that I have developed the above scoring rubrics, I am concerned that I may have overspecified the criteria for the paper and project. Am I precluding the students from writing certain kinds of papers which would be equally valid than those papers which fit the criteria? Have I left myself enough room to make individual exceptions to the scoring system to allow such papers, while still being fair to the rest of the class?

Educational Results:

Did any of the work done in the class result in positive action? How many students continue to incorporate environmental equity in their work after the course is over?

If the students buy into the idea of creating an accessible corpus of work on the subject of this course, and especially if the corpus can generate tangible as well as moral support, students should have an incentive to continue developing work after the course is over and submit that work to the corpus. This would create a paper trail that would make an otherwise difficult to track educational result relatively simple to track. What counts as "Positive actions" that one might want to track depends upon the projects undertaken by the course. To the extent that such projects work with community groups, periodic communication to see how such groups are doing would provide tracking of this educational result. In fact, such tracking would be a valuable project for students in future classes, as well as potentially meaningful learning experiences for those students.

Appendix H: Access and Equity in the Production of Environmental Education

If Environmental Education is to achieve its long term goals, issues of access and equity must not only be addressed in the curricular materials, but must also be addressed in the production process which creates those materials. I will try to briefly outline my current thoughts on this topic.

When considering where sources of current inequity might lie, I feel that we would do well to start with Schwab's Four Commonplaces of Education: the subject matter, the teacher, the student, and the social milieu. (Schwab 1973)

The Subject Matter

In the subject matter, we need to ask 'Who is being represented in our materials and can the students identify with them?', 'What issues are designated as important, either explicitly or implicitly?' For example, people in communities of color are often concerned with environmental issues, even if they do not describe themselves as environmentalists. Their highest priority may be health and safety issues, whereas the 'mainstream' of the environmental movement tends to place highest priority on 'wilderness' issues. In this context, we would need to ask 'Is the production process producing sufficient quality materials on health and safety issues that are accessible to people of color?' If the answer is 'No' we need to consider inequities in the other commonplaces that may be preventing production of such materials.

Even if such materials are being produced, it would be wise to look at other inequities that might be neutralizing the impact of such materials.

The Teacher

The second commonplace, the teacher, serves a vital link between the production process and our ultimate goal, the education of students. Even if our materials include an equitable balance of subject matter, if the teachers can not use it, all of our efforts are for naught. We must ask 'Do the teachers have sufficient background in the sciences or other necessary disciplines to properly teach the materials and answer any additional questions those materials may lead the students to ask?'. If the teacher does not have intellectual access to the material, if the teacher can do nothing but parrot the material, how can we expect the students to have access to it? How can we expect the teachers to be able to answer the question 'Why do we need to learn this?' It has been shown by Anyon and others that teachers inevitably transform the curricula. This is sometimes due to the practical demands of teaching (such as the need to cover large quantities of material), or due to the school culture. Anyon quotes one teacher as saying "what has happened in the past and what exists now may not be equitable or fair, but [shrug] that is the way things are and one does not confront such matters in school." (Anyon 1983, p. 154) To help solve these problems, teachers should be included in the production of new materials from the start, and to ensure that they have real, not token, participation, they should be paid for their participation like any other member of the design team because teachers have enough of an overworkload as is.

The Students

Teachers are not the only ones who transform curricula; students transform curricula too. Posner has argued that "the students' interpretation of the tasks and their subsequent task engagement determines what and how much they learn." (Posner 1982, p. 343) If students convert novel, meaningful tasks into rote tasks, the best materials and the best efforts to teach those materials will not achieve the kind of conceptual change that environmental education often strives for. The designer can not know how the students will transform their materials unless they involve students in the design process. The designers should build tools for meaningful learning, such as concept mapping, into their materials to encourage positive transformations. Further, the involvement of teachers and students can enrich the curricula both for themselves and for the designers. Designers typically must create generally applicable materials. Modifying the materials to meet locally specific circumstances is left to the already overworked teachers. If however, the designers were to provide support to the teachers and students to develop and disseminate their transformations, the designer would obtain new ideas to enrich the general materials, and other teachers would be inspired by the specific examples and would be more likely to attempt their own, to say nothing of the boost in self-esteem the students would get by writing for an audience larger than their classroom. The Foxfire model is a good example of this. (Puckett 1989; and for an example of a Foxfire product: Rabun County Students 1993)

The Social Milieu

All of what I have commented on so far has been independent of the technology used to disseminate the materials. Even if our design process is equitable, teachers must be able to afford access to the materials. I believe that electronic distribution can play an important role here, though I admit that there are obstacles to be overcome. One of those obstacles is the question of property rights in the electronic context. How do we simultaneously make materials as accessible and inexpensive as possible, and still protect the rights of the authors to the support they need to continue their work? This question becomes increasingly critical when we talk about authors from indigenous communities who start from a historical power disadvantage. In general, I feel that we need to recognize that part of the value of a curriculum derives from the work of the author, and part of the value derives from the curriculum's connection to the rest of the information universe in a similar manner as the value of land can be seen to derive both from the individual and the community. (See Abrams 1991b for more on this topic.) It is my feeling that true access to and equity in the production of environmental education can only be realized if the various creators and disseminators of environmental education and information create a context in which cooperation is as important as competition.

Two Questions for Action Education

What is the state of the world? What ought that state become?

The answers to these two broad questions ought to generate the intended learning outcomes of any course. These questions are fundamentally contradictory, both on a philosophical and a practical level. I contend that it is in the working out of the contradictions between these two questions that education occurs.

The first question is often addressed in our educational system. The teacher announces that she has the facts. The students are told that they must learn these facts about the world. The students will be tested at the end of the course as to whether they know the facts. Some have suggested that schools conduct the same process with regard to values. The teacher says 'here is how you should behave', in school and in work. The students are judged by how well they fit society's normative patterns. Value as fact may sound like a shocking idea but it is taken for granted most of the time, as evidenced by the history of the "hidden curriculum." (Giroux & Purpel 1983)

Rarely, however, does school deal with questions of 'ought.' Verbalizations of ought are too likely to fall outside the norms. They are too likely to require effort of the students, of the teachers, and of society. And yet, it is the ought that drives people to live, not just exist. People do not live on bread alone. On the other hand, ought by itself won't get the student very far. It would be foolhardy and dangerous to begin construction of a new building without first examining the nature of the soil and bedrock.

In order to help construct a set of tools with which to mediate the contradictions of the two questions, I would like to propose a new way of looking at the source material upon which curricula are built.

Two Kinds of Primary Sources

Traditionally, source material is described as either primary, secondary or tertiary, depending on how far from the original event the source is. Thus, a diary might be a primary source, a biography might be a secondary source, and an article summarizing the ideas of biographers might be tertiary. I would like to refer to such material as event-primary, event-secondary, and so on.

In contrast, if one accepts the validity of the two questions for action education, the students will be engaged in a process which transforms the events on which the course focuses. This transformation may change society, or it may only change the ideas or values of the student. Either way, if the process of change is to be successful (for the moment ignoring the issue of whether or not the change is desirable), the student must gain proficiency in the processes of change. Thus, for example, if one feels that a play can catalyze a transformed viewpoint, that play is primary to the achievement of one's intended learning outcomes. Therefore, I would describe that play as a process-primary source. The play is most likely an incomplete instructional focus because it is likely also to be an event-secondary source, but with appropriate complementary event-primary sources, one can make the most of the play's strong suits.

Further, the processes that the students undertake should parallel the processes which the educational system as a whole takes. The processes of the educational system as a whole (or what they should be) are certainly open to debate. I will lay out what I feel are the critical processes in the hopes that it

will aid those considering using the curricula provided in this thesis. Perhaps it will aid the students as well.

Critical Processes of Education

Education is concerned with the expansion of what is known, and with the creation of new understanding. In this context, there is very little difference between art and science; processes of discovery and creation which are conducted with different languages.

Therefore, as an instructor, I do not stand at the front of the class and claim that I know what the students need to know. I know a small piece of what they ought to know, and I teach not so much to convey my piece of the knowledge domain, but to participate in education with my students in the creation of the knowledge domain. The students will know that they have succeeded in the course if by their actions the course itself is improved.

The students should not only read process-primary and event-primary sources, they should also engage in primary processes. Thus, in the environmental equity course included in this thesis, students would participate in the creation of plays, and would conduct library research which has validity for themselves as well as for the course.

While the approach outlined above is extremely useful in a new subject such as Environmental Equity which has relatively little accessible event-secondary material, it is also useful in more established fields, such as general environmental science. In fact, unless a field is dead (and can any field be said

to be dead if there are still people who care enough to study it?), any other approach is just a waste of time and money. If it is possible for students to advance the state of a field and its educational penumbra, why would anyone ask them not to advance the field? This brings up a related point. A field's maturity may be measurable by the volume of its literature, but the field's strength is dependent upon the number and the ability of its practitioners. Therefore, it is in the best interest of the field to teach in a way that allows every student to succeed through participation.

The Unknowable

When considering how the environment has been portrayed in the theatre, and especially when attempting to use such theatre to teach about the environment, I have often found the task difficult in part because the subject matter of this task is unknowable. The subject matter is unknowable in the sense that I, as an individual, can not possibly know the answer to every question on any environmental topic a student may ask, no matter how long I study. If one can move beyond ego (academics can be as guilty of this as actors) and admit that, as an individual, the task is impossible, one can then move to an understanding that to succeed one must rely upon a group. Creating this group, and creating equity within it, is as much the task of education as is the simple search for knowledge.

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Glossary

CSCW: Computer Supported Cooperative Work

CV: Contingent Valuation. This method is also abbreviated in the literature as CVM, for Contingent Valuation Method.

Method acting: generally refers to a style of acting which depends upon internal monologues and other work of the actor which creates a life of the character which is not in the script, and which work the audience only sees indirectly.

RSC: Royal Shakespeare Company.

Theatre II: is defined as a set of generative exercises which often derive from an innocuous source (a poem or a drawing, for example) and which create a theatrical product from this source according to a restrictive set of rules. The product is generally more than a skit, but less than a scene. While the process and the product of such activities often has a "superficial" look to it, it can often be quite valuable.

The Theatre of the Environment -
Curriculum Design for Environmental Justice

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Presented at the North American Assocation for Environmental Education conference
NAAEE Portland 1995

   Six years ago, I began investigating how environmental issues have been portrayed in the theatre. One year ago, I completed my Master's

Thesis   (Abrams,

1995)   , which was based upon my earlier groundwork. For my Master's Thesis, I developed a two hour workshop in which I combined concept mapping about a specific environmental issue - in this case, environmental justice - with a participatory play reading, and concluded with a discussion about the play and the issue.

   This article will focus on those results of my Master's Thesis which relate to curriculum design.

Environmental issues are complex. So are the concepts which we use to explain these issues. To illustrate the nature of my participants' understanding, I place two flip charts at opposite sides of a room. On the first flip chart, I write the word "environmental". I ask the audience if they think they understand this word. Most people say they do, and the NAAEE Portland audience was no exception. I then ask the audience to suggest three words which help to define or describe "environmental". I then write the word "racism" on the second flip chart (it is related to "justice", but is more provocative). I ask the audience how many people understand "racism". The audience usually responds that they understand "racism" too. I then ask the audience for three words which describe "racism".

Next, I physically move one flip chart next to the other flip chart. I ask the audience if they understand the phrase "environmental racism". Even my NAAEE audience was not as sure that they understood the phrase relative to their understanding of the individual words. My NAAEE audience's reaction was consistent with the reaction of my Master's Thesis participants: they had a good idea of what environment was, and a good idea of what racism was, but were somewhat unsure or completely unsure of what a phrase like environmental racism was.

The process I have just described, where I determined that the audience knew something about the components of an idea, but did not know the idea itself, is an illustration of one of the fundamental Ausubel-Novak ideas of education: the best way to teach is to first assess what the student already understands about a subject, and then teach from there

(Novak,

1977)   .

   As a result of my Master's Thesis, I have developed a definition of environmental justice which I derived by combining the concept maps of several of my participants:

     Environmental injustice is a condition where people become trapped by society - by poverty, by their inability to move, by lack of information or education, by other people's patterns of consumption, and even by their own patterns of consumption. Once they are trapped, people are more likely to be unfairly exposed to a variety of environmental hazards. Some of this exposure may be visited on them purposefully, but this exposure can have been created unwittingly.

   The curriculum design question then becomes "how can a teacher guide students from their current, incomplete understanding, to the full concept that the teacher is trying to teach?"
   Two valuable tools are concept mapping and anchor analysis.
   Concept Mapping

Concept mapping is a technique where the teacher asks the student to describe the relationships between a main idea and its related ideas. Thus, rather than just listing words which help describe "environmental", the student would arrange the words on a piece of paper, and draw lines between them to denote the relationships. On each line, the student would write a word or phrase which describes the relationship.

In a situation where a student understands environment and racism, but does not understand environmental racism, a teacher might want students to construct their maps in two chunks. First, construct a map with "environmental" as the main idea, and then construct a map with "racism" as the main idea. Finally, the teacher would ask the student to create cross links between the two smaller maps.

During the NAAEE session, the audience suggested the following words:

Environmental: habitat, resources, connections
Racism: prejudice, exclusion, ignorance

I have constructed a two chunk concept map with one of its possible cross links (Ignorance to Habitat).
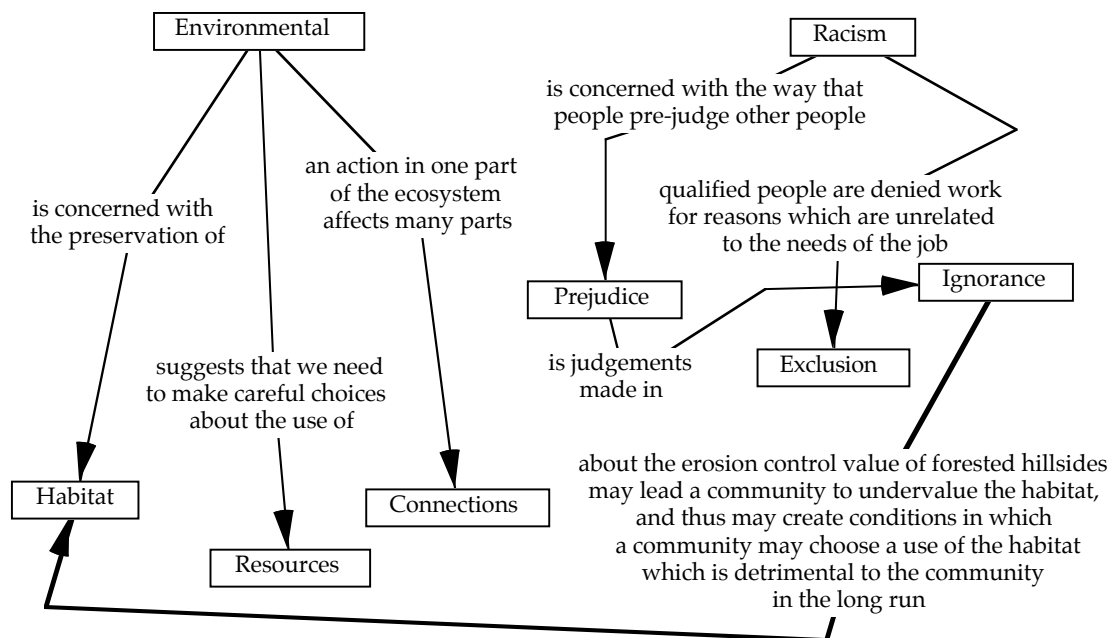
Figure 1. A concept map of environmental racism based upon the audience's suggestions.

Anchor Analysis

Once a teacher has found out something about what the student knows about the subject matter (such as when the student draws a concept map), the teacher needs to determine how to teach from there. Anchor analysis provides a way forward: examine concept maps for understanding which is true or partially true, and ask the student explore those parts of the map further.

I will provide three examples of anchor analysis using concept maps drawn by my study participants.

Participant P23 stated at the outset of the workshop that she had no idea what environmental racism was. I suggested that she concept map "racism". Looking at the sequence in her map consisting of [Racism] -> respect -> [Equality], I might suggest the following way to help the participant understand environmental racism in a way which is anchored in her current understanding. (See Figure 2.)

Certainly, if one treats other people with respect, people are more likely to be able to interact with each other as equals, and if people can interact as equals, exchanges are more likely to be fair and just. This concept chain relates directly to the classic case of environmental racism: the citing of toxic or hazardous waste facilities. A company comes to a community and says, 'We would like to build this hazardous waste facility in your community. It will be safe and it will provide the community with good jobs.' How is the community supposed to know if they are telling the truth? The company can certainly go and hire experts to argue their case, but if the community is poor or poorly organized, will they be able to afford a second opinion? Supposing that they do accept the facility, and several years later people start to get disproportionately sick. Will the community be able to take the company to court to get compensation? For a community like the one in Dumping

Ground   (Diggs,

1982) - the play read in my study, the
answer is probably no.

But how do you create respect? Environmental Equity can provide one answer. The
participant wrote [intolerance] -> keep apart - distance -> [segregation], and [intolerance] -
> fear -> [violence]. Respect is a wonderful goal, but the distance created by history,
residential patterns, food choices and other differences, and the barriers created by fear are
serious obstacles to respect. One way to overcome these barriers is to have people of
different backgrounds work together on a common project. A project that could be
potentially used for this purpose is the Global Rivers Environmental Education Network
(usually called GREEN for short). GREEN

(Mitchell & Stapp,

1992)   has classes from several school
systems along a river or other water system learn how to collect and measure water for
water quality studies. The students exchange their data and discuss their findings. In
addition to the benefit of working together and seeing that the people from other schools
are real people and not stereotypes, this kind of project has a benefit that derives from its
environmental nature. Clean water is important for health. This aspect of the environment
is independent of the color of one's skin. This is an example of environmental equity in the
sense that both groups together take ownership and responsibility for a common resource.

RACISM

HATRED — LACK OF INTEREST — RESPECT

INTOLERANCE — TOLERANCE — EQUALITY

KEPT APART - DISTANCE — FEAR — SEPARATION — UNDERSTANDING FRIENDSHIP

SEGREGATION — VIOLENCE — NO UNDERSTANDING — STRONG TIES

SEPARATION — DESTRUCTION — NO COMMUNICATION — POOR RELATIONSHIP — NO HATRED OR FEAR

NO RELATIONS — EXTINCTION — MISTRUST — LACK OF COMMUNITY — LITTLE VIOLENCE

NO COMMUNICATION, NO CONTACT RELATIONSHIP GONE — CLOSE COMMUN WORK TOGETHER
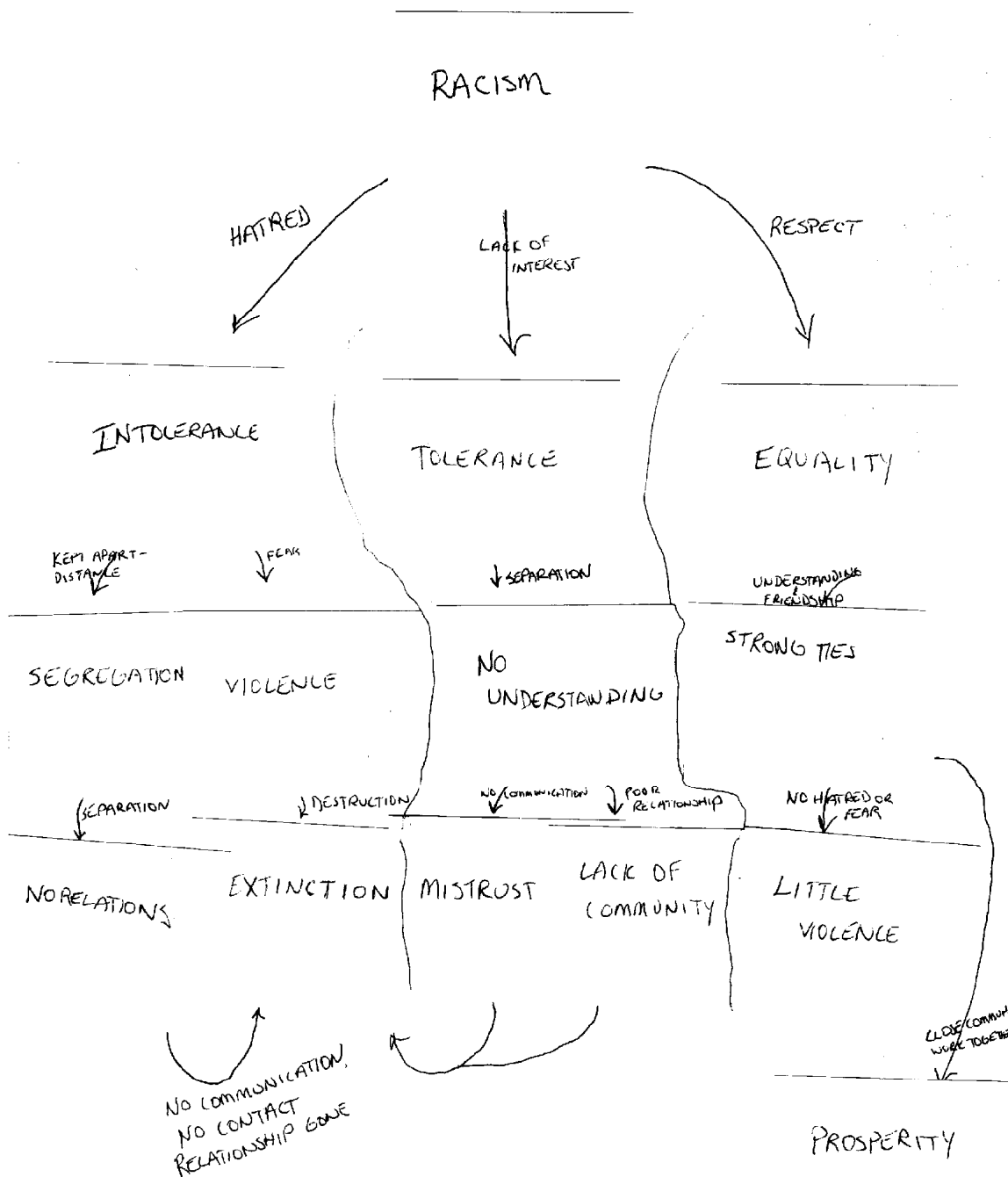
PROSPERITY

Figure 2. Participant P23's Concept Map.

As a second example of anchor analysis, consider participant P6's map. This participant not only has an understanding of environmental racism, but also is able to differentiate between environmental racism, equity, and justice. I would ask this participant: (See Figure 3.)

How do you define needless degradation? Can degradation ever not be needless?

Environmental Equity (lack thereof)

between → Humans and animals or plants
between → Different groups of humans
between → Economic and Spiritual values

Humans and animals or plants — is → Environmental Injustice
Different groups of humans — is → Environmental Racism
Economic and Spiritual values — is → Environmental injustice

Environmental Injustice — when → habitats are needlessly degraded
Environmental Racism — when → minority neighborhoods are needlessly degraded
Environmental injustice — when → values are ignored

habitats are needlessly degraded — for → economic gain
minority neighborhoods are needlessly degraded — for → economic gain
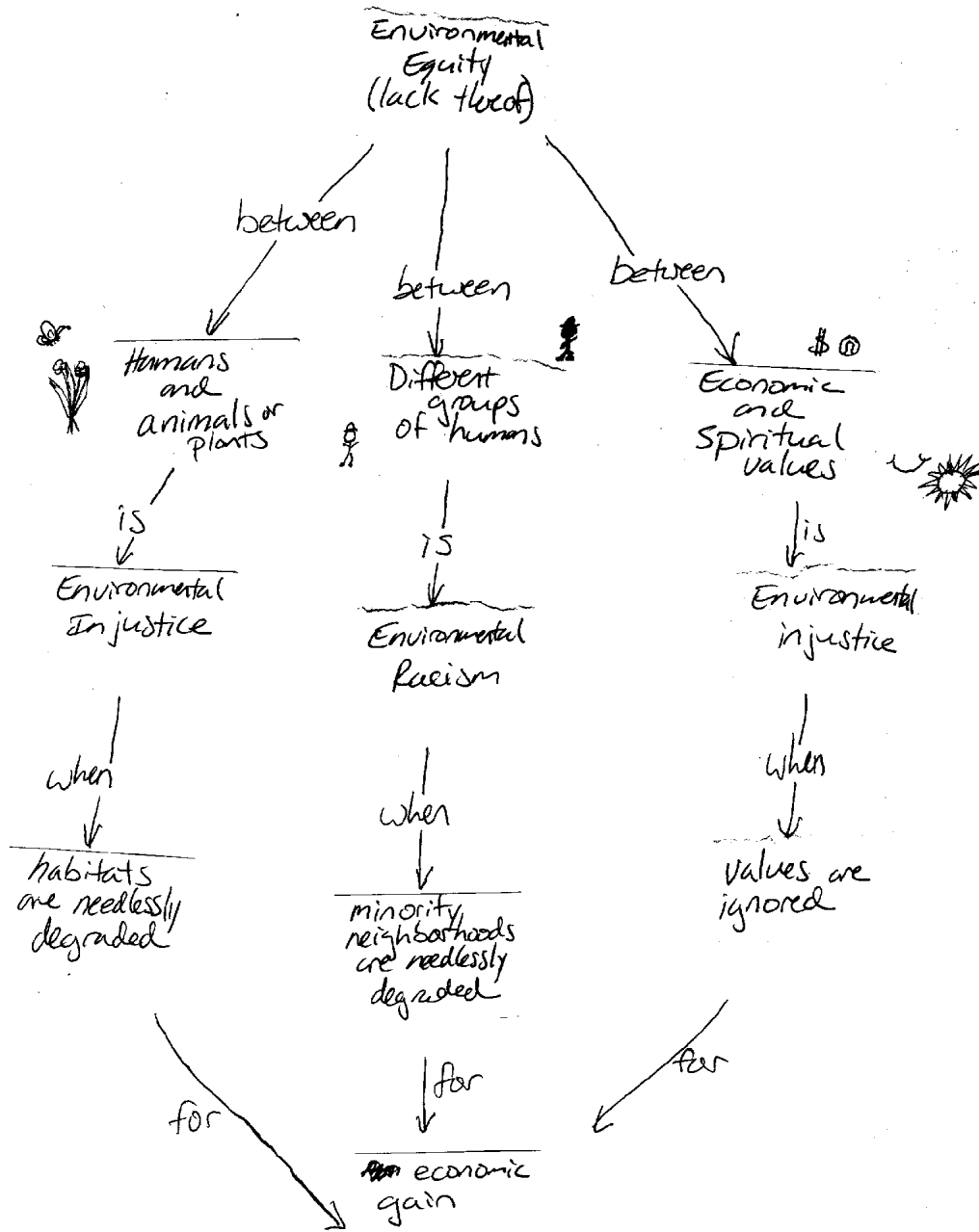values are ignored — for → economic gain

Figure 3. Participant P6's Concept Map.

   As a third example, if a student comes into the learning situation with an extensive knowledge of the subject, and the ideas in the concept map appear to be true, the teacher can always ask for more detail. For instance, one participant wrote [Environmental Justice] - is -> [People being unfairly exposed to environmental hazards] - because of -> [their race or culture] - known as -> [environmental racism] - example -> [James Bay]. (See Figure 4.)

       What light does the particulars of James Bay shed on the more abstract concept of environmental racism?
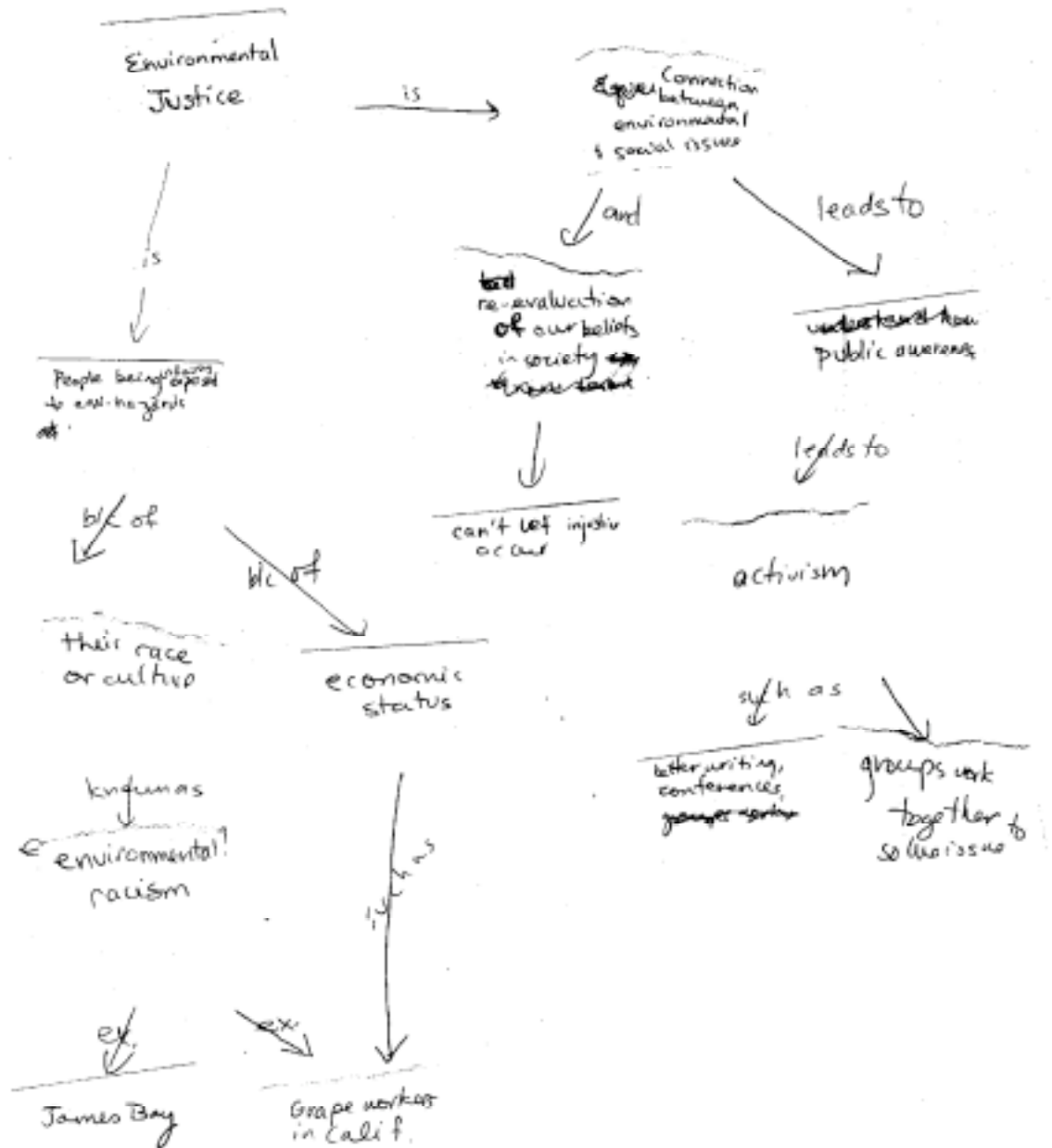
gure 4. Participant P8's Concept Map.

The role of the theatre

Real experiences are the most powerful way to teach people, but we can not always put students in the experiences we might like them to have. Some experiences may be difficult to create due to travel expenses. Other experiences may be valuable, but have risks which outweigh their benefits. Good playwrights have the ability to synthesize what was important about an experience. A good playwright can put this synthesis into a play so that a student can do more than observe that experience: the student can participate in the experience, and discover what it felt like to be there. The student is also able to participate in a larger number of experiences than would have been possible through the resources and happenstance of real life.

In contrast to much of schooling, the theatre communicates the affective importance of an experience, as well as the cognitive importance of an experience.

I recommend that educators integrate the arts and the sciences. Art is good for inspiring people and asking the deep questions that science ignores, but is not as good at being self critical and looking at the details.

I recommend an iterative process, where students would read a play, and then do research based upon the play. This could include social science research where students would ask "Are there similar issues in our community?", and physical science research where students would ask "What does the ecology of the habitat that the play takes place in really look like?" The science inquiry can then be used as the basis of new art which will present the students' findings to the community. Students can then take the new art, be critical, and do research, which would lead to new art, and so on.

My work as a resource for other environmental educators

My Master's Thesis contains reviews of 53 plays. These reviews describe the environmental issues each play addresses, and suggests ways in which the plays could be used as education. This allows someone in a school, nature center, or a theatre, to find a play that deals with an issue they are interested in, and decide whether they want to read the whole play. I have also constructed an index which lists the length of each play, and the number of male and female roles.

My Master's thesis also contains two complete curricula which suggest ways that groups of plays can be taught over the course of a semester.

Educators interested in the Theatre of the Environment do not have to restrict themselves to my curricula. For instance, NAAEE produces sets of materials designed to help people make choices about environmental issues. These Environmental Issue Forum materials could be used as a source of research on an environmental issue, which a teacher could then combine with a reading of one of the plays I have reviewed. In addition to considering the choice that the student herself might make, the teacher might ask the student to think about the choices she might make if she were one of the characters in the play.

Finally, Education, like Art, is never done. Just as there are new works of the theatre which are being written, there are new approaches to teaching using the theatre which teachers are trying out. I welcome correspondence about both new works of theatre which address environmental issues, and new ways to use such works as education. After all, the play may be the thing, but a play with an audience is better, and an audience who is motivated by the play to communicate and create is best of all.

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