

Meeting of Minds XIII
Journal of Undergraduate Research
Volume 7
2005



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About the Meeting of Minds: Journal of Undergraduate Research

The *Meeting of Minds Journal of Undergraduate Research* is specifically designed to offer undergraduate students the opportunity to experience the manuscript submission and review process. Students who participate in the Meeting of Minds Conference are invited to submit a written version of their presentation to the Journal Review Board for publication in the volume, which corresponds to the presentation year. The initial volume published in 1998 incorporated submitted papers from the inception of the conference through the past year (i.e. 1993-1998). This volume presents papers from the thirteenth conference held at Oakland University in May 2005.

The articles in this journal represent the work of undergraduate students, with the assistance from a faculty mentor. The first author is always an undergraduate student. The relationship between the mentor and the student is noted by the use of *with*.

This journal represents the culmination of many years of experience in the collaboration process between three undergraduate universities in Michigan. It also represents a strong personal commitment of many individual faculty members to undergraduate research and creative endeavors.

The Meeting of Minds Conference and this journal are a shared responsibility between the University of Michigan-Dearborn, the University of Michigan-Flint, and Oakland University. Each university accepts the responsibility to host the conference and subsequently to publish the journal on a rotating basis. The order of the responsibility follows the subsequent pattern: the University of Michigan-Dearborn in 2003, the University of Michigan-Flint in 2004, and Oakland University in 2005.

Manuscript Guidelines. Students' papers were to be submitted in MS Word for PC or MS Word for Macintosh. The text of all manuscripts was to be no more than 5-7 double-spaced pages typed in a 10-12 point font size with one-inch margins. The instructions for preparing the manuscript are provided by the designated editor of a particular volume. Completed "Permission to Publish" and "Faculty Mentor's Approval" forms must also be included with the manuscript. These forms are available to students with the conference registration materials. The Editorial Board reviews submissions for documentation and compliance with manuscript guidelines. The authors are ultimately responsible for the content, information, and any interpretation within the manuscripts. Manuscripts accepted for publication become the property of the Journal Editorial Board. For each of the accepted manuscripts, a single complementary copy of the published journal is given to each author and faculty sponsor. Additional copies may be obtained from the editor at the host institution.

Foreword

Access to affordable higher education is critical to the advancement and well-being of a modern society. An important element of college or university education is availability of opportunities at undergraduate level to engage in faculty-sponsored research and creative works. The hands-on real life experiences acquired during early and formative undergraduate years provide a solid foundation for creativity, innovation and career choices.

For 13 years, *Meeting of Minds* has provided a platform for our students to showcase their research and creative endeavors in all disciplines. The three participating institutions have committed support for the collaborative efforts of students at Oakland University, University of Michigan-Flint, and University of Michigan-Dearborn to interact and share their collective experiences and present their findings and works.

Contributions in this volume represent academic achievements and success of our students in pursuit of excellence, acquisition and sharing of knowledge. On behalf of the local conference organizing committee, the three provosts at our collaborating universities, I extend sincere thanks to all the participating students, faculty and staff whose generosity in efforts and dedication made the *13th Meeting of Minds* conference a grand success and this volume of the *Journal of Undergraduate Research* a shining reality.

Virinder Moudgil
Vice President for Academic Affairs and Provost
Oakland University

Preface

On May 13, 2005 hundreds of undergraduate students, dozens of faculty, and countless community and family members gathered on the campus of Oakland University for the 13th annual Meeting of Minds Undergraduate Student Research Conference. The annual Meeting of Minds event is a joint effort of three campuses that pride themselves on the quality and quantity of undergraduate research: the University of Michigan-Dearborn, the University of Michigan-Flint, and Oakland University.

As a celebration of the research, scholarly and creative accomplishments that emerge when undergraduates have the opportunity to work closely with faculty mentors, Meeting of Minds has grown significantly since its inception in 1993. At the 2005 conference there were over 180 student presentations; the topics ranged from philosophy to poetry to physics and beyond. Sessions were programmed to be interdisciplinary, so that attendees could learn to value the ways in which diverse disciplines express their intellectual findings. Making a professional-level public presentation of one's own work is an extremely valuable experience for an undergraduate student. All of the knowledge and skills of their undergraduate years are brought together in the formulation of a unique question or quest and the completion of a significant research project or creative task. Rightfully, students and faculty alike take great pride in the final presentation.

Over 70 of the participants in Meeting of Minds XIII have chosen to take their commitment to their scholarship a step further. They have prepared and submitted the professional-level manuscripts that you will find in this volume of *Meeting of Minds: Journal of Undergraduate Research*. The student authors have had the experience of following journal guidelines to reframe their presentation in a different format; they have consulted with their faculty mentors and have responded to editorial feedback resulting in the high quality publication at hand. Your perusal of these pages will affirm the excellence and diversity of our students' work. We hope you enjoy the read.

Finally, I want to thank the faculty, staff and students from all three campuses who worked cooperatively on making the 13th Meeting of Minds gathering a great success. Support begins with the commitment of the Provosts from each campus; their continuous endorsement of the event and their financial contributions each year are critical to the success of the day and the publication of the journal. We are grateful to our faculties for their willingness to mentor student projects, their assistance in presentation and journal preparations, and their supportive attendance. My colleagues, Dr Sheryl Pearson and Susan Gedert at the University of Michigan-Dearborn and Dr Sally Harris and Sally Conley at the University of Michigan-Flint assured a great turnout from their respective institutions. The faculty, staff, and students on the Oakland University Committee for Meeting of Minds XIII were terrific. I especially recognize Dr Cynthia Sifonis and Dr Aldona Pobutsky, the faculty editors for this volume of the journal; likewise, the technical support of Laura Schovan is greatly appreciated.

Kathleen H Moore, Associate Dean
College of Arts and Sciences, Oakland University

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Evaluating Source Credibility During Critical Thinking

Jason Adams & Melissa Wojnaroski

Faculty Mentor: Debra McGinnis

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Abstract

Epistemological understanding pertains to an individual's beliefs about knowledge attainment and related processes (King & Kitchener, 1994; Hofer & Pintrich, 2002). One critical aspect of knowledge attainment is the evaluation of source credibility. This study was designed to examine whether source credibility would affect evaluation processes. To do this, all of the students read the same summary of a research scenario, but half were told the source was a scientific journal and half, a non-scientific publication. In addition, the responses of Oakland University undergraduates enrolled in *Foundations of Contemporary Psychology* (Psy 100) were compared to those enrolled in or who had completed *Introduction to Research Design* (Psy 250); and responses of students responding "yes" to prior belief were compared to those who responded "no". Overall, Psy 250 exhibited responses reflecting a more skeptical approach than Psy 100 students. In addition, participants claiming belief prior to participating rated belief, subjective processing, and source credibility statements higher than those who did not. This pattern was also observed in participants who claimed that their beliefs became stronger because of participation.

Introduction

Everyone encounters topics that require them to evaluate information that may be consistent with or may contradict what they already know. The source is evaluated when determining the credibility and/or validity of information: particularly if this information results in changes to previous beliefs or expectations. Theorists and scientists who study what people believe about knowledge and its acquisition use the broad term *Epistemological Understanding* for these beliefs and related processes. Kuhn, Cheney, & Weinstock (2000) obtained evidence that, in general, an individual's epistemological understanding processes can fall in one of four categories: realist, absolutist, multiplist, and evaluativist, although where one falls depends on the context (e.g., ice cream preferences elicit more multiplist responses compared to evaluating pharmaceutical effectiveness).

Multiplists are individuals who endorse multiple conclusions: often stating that "Everyone has a right to their own opinion." Thus, multiplists tend to evaluate evidence somewhat subjectively and are less likely to weigh evidence and the credibility of its source. Evaluativists are more likely to consider the source of information as well as the reasonableness of any logic used before reaching a conclusion. Even though these differences help differentiate individuals, any individual can display both approaches, either as they transition from multiplist to evaluativist approaches, or across contexts (e.g., food preferences lend themselves to multiplist approaches) (Kuhn et al., 2000).

The present study investigated how the source of information influences how credible a reader finds particular claims and to what extent people use subjective and objective approaches when evaluating information. Additionally, the experiment explored differences between two types of students: students enrolled in *Foundations of Contemporary Psychology* (Psy 100) and those enrolled in or having completed *Introduction to Research Design* (Psy 250). These two

groups of participants were compared to evaluate whether being exposed to scientific approaches in a university course resulted in advanced thinking strategies.

The study herein is a between-subjects experiment in which participants were instructed to read a summary of an experiment. Summaries were identical for all conditions, except half listed a scientific source, and half, a non-scientific. Students were asked to respond to questions pertaining to how they evaluated the source and content of the information.

The goals of this project were to examine whether (1) journal source affected responses; (2) whether students who were taking or had taken Psy 250 responded differently from those who had not; and (3) whether participants who responded that they believed in telepathy prior to participation, or because of participation, responded differently from those who did not claim prior belief or belief change. In short, we hypothesized that, overall, students would be sensitive to journal source, with those in the scientific condition differing from those in the non-scientific condition; and that Psy 100 students would differ from Psy 250 students.

Method

Participants

Three hundred seven Oakland University undergraduate students participated in the current experiment in return for course credit. Two hundred twenty three participants were enrolled in Psy 100 and 84 were enrolled in or had completed Psy 250.

Materials

Ganzfeld Summary. A summary of a published experimental situation in which the *Ganzfeld* procedure was used to suggest the existence of results supporting the validity of telepathy was provided to each participant. This summary accurately reflects the conclusions as published by the authors, except that the names of the authors were changed to Dansk & Jones. The summary was identical in each condition except for source cited at the top of each summary. In one condition, the summary was said to have been taken from “Scientific Studies”, and in the second, the journal was titled “New Age”. This summary is provided in Appendix 1.

Research Evaluation Questionnaire (REQ). A questionnaire consisting of 24 items using a Likert scale (1=*disagree absolutely*; 6=*agree absolutely*) was filled out by the participants after reading the *Ganzfeld* summary. The REQ solicited the opinions of the participants about the credibility of the source, the validity of the experimental procedure, and their attitude towards telepathy.

Additional questionnaires. Included in the initial study but not in the current paper due to length restrictions were two additional questionnaires: A *Justifying Conclusions Inventory* (JCI), and a *Paranormal Attitudes Inventory* (PAI). Both questionnaires used the same response format as the *REQ*. The 23-item JCI evaluated attitudes and problem solving methods of participants confronted with debatable issues. The 26-item PAI evaluated attitudes of participants toward pseudo-scientific phenomena or other topics that generally fall outside the realm of science. All questionnaires, including the demographic form, were combined into a single packet with each section being labeled with the title of the corresponding questionnaire. Demographic questions were also presented to participants; and questions pertaining to belief in telepathy before participation and because of reading the summary.

Procedure

Students participated in groups of 3-15 students and all participants at one time were

assigned to the same experimental condition. After participants had filled out the informed consent they were presented with a summary in one of the two conditions and the questionnaire packet. They were instructed to read the summary and then proceed to the questionnaire packet.

Results

Factor Analysis of the REQ

Factor analysis was used to examine the conceptual structure among the REQ questions. Three factors accounted for 65.4% of the variance among the questions, and these were (1) Source Credibility, (2) Subjective Processes, and (3) Level of Belief. Table 1 presents the factor loadings for these three factors. Table 2 presents two of the items with the highest factor loadings to provide more information about this questionnaire and these three factors.

Table 1

Factor Loadings Research Evaluation Factors

REQ Item #	Level of Belief	Source Credibility	Subjective Processes
12	.856		
17	.826		
6	.807		
1	.760		
8		.864	
14		.797	
3		.523	
5			.787
15			.621
4			.601
Cum %	31.05	48.74	65.40

Table 2

Representative REQ Questions

Factor		Representative Questions
Level of Belief	12	This article increased my belief in telepathy.
	17	This article increased my belief in paranormal phenomenon.
Source Credibility	8	This research was published in a reputable source.
	14	The journal publishing this research is well-respected scientifically.
Subjective Processes	5	People who do not believe in telepathy are close-minded.
	15	Because it is easy to conceive that telepathy exists, claims about telepathy are accurate.

Effects of Source (Scientific, Non-scientific) & Course (100, 250) on REQ Subscale Scores

Three 2(journal source: scientific, non-scientific) by 2 (course status: 100, 250) between-subjects ANOVAs were used to examine the effects of the independent variables on three dependent variables, source credibility, level of belief, and subjective processes (REQ subscale averages). The main effect means are presented in Table 3 below, with the corresponding F statistic for each analysis. The main effect of journal source (scientific vs non) was significant for the dependent variables source credibility and belief; and the main effect of course status (100, 250) was significant for source credibility and level of belief.

In addition, a significant journal source by course status interaction was observed for subjective processes, $F(1, 223) = 4.84, p = .03$. Students at the *Psy 250* level rated subjective process items lower in the scientific condition than in the non-scientific condition (2.21, 2.63), whereas *Psy 100* averages were similar across journal source conditions. (2.55, 2.53). The other two interactions (DV = level of belief and source credibility) were not significant.

Table 3.

REQ Subscale Means by Journal Source and Course Status

	IV: Source		F Stat (1, 223)	IV: Course Status		F Stat
	Scientific	Non-scientific		100	250	
Source Credibility	3.59 (.85)	3.35 (.94)	5.77**	3.59 (.84)	3.11 (.99)	18.43***
Level of Belief	2.57 (1.15)	2.61 (1.15)	ns	2.69 (1.13)	2.37 (1.17)	3.72*
Subjective Processes	2.46 (.76)	2.55 (.80)	3.86*	2.54 (.77)	2.41 (.81)	ns

Note. Standard deviations are in parentheses under means. Significant F-statistics are indicated with bold typeface and asterisks.

ns = not significant * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 4.

REQ Subscale Means by Belief Before and After Subgroups

	Belief Before		t-stat (df =305)	Belief After		t-stat (df =305)
	Yes n= 133	No n= 174		Yes n = 73	No n= 234	
Source Credibility	3.72 (.78)	3.25 (.94)	4.64***	3.93 (.73)	3.31 (.90)	5.35***
Level of Belief	3.22 (1.03)	2.12 (1.00)	9.43***	3.77 (.88)	2.23 (.97)	12.01***
Subjective Processes	2.92 (.72)	2.19 (.66)	9.20***	2.91 (.79)	2.38 (.73)	5.30***

Note. Standard deviations are in parentheses under means. Significant t-statistics are indicated with bold typeface and asterisks. ns = not significant * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Effects of Belief Before and After

Across the board, participants claiming belief prior to participation and those stating that their beliefs became stronger after reading the research summary had significantly higher source credibility, level of belief, and subjective processes subscale scores. These results are provided in Table 4.

Discussion

Participants in the scientific condition rated the source more credible than those in the non-scientific condition, suggesting that undergraduates taking Psychology courses do attend to source information. In addition, participants in the scientific condition were less likely to endorse items reflecting subjective processes, although the effect size for this result is small.

Compared to Psy 100 participants, Psy 250 participants were more critical of the source overall, a result that reflects skepticism when the source came from both a scientific and a non-scientific source. The design was between subjects with participants randomly assigned to the scientific or to the non-scientific condition, so participants were never asked to compare the two sources for credibility.

Psy 250 students rated subjective process items significantly lower than Psy 100 students in the scientific condition, producing a significant source by course interaction. This interaction reveals that Psy 250 participants may assume a more skeptical posture when facing a claim that contradicts their expectations about telepathy: assuming that most expect the research not to support its validity. It is our contention that this interaction also reflects a tendency for Psy 250 students to tap into evaluative processes appropriate for evaluating science when they notice that the source is a scientific journal. However, the Psy 250 students in the non-scientific condition

had a subjective subscale average that was similar to the Psy 100 average, presumably because the 250 students did not tap into evaluative approaches when they were presented with an article from a non-scientific source.

Among the most robust findings herein are the effects of prior believing and increased believing on all of the REQ subscales, journal source, level of belief, and subjective processes. Participants responding “yes” to the prior-belief question were more likely to rate subjective process items higher than those responding “no” to the prior belief question. In addition, prior-believers also rated credibility and level of belief items higher than those who did not claim prior belief. This outcome is consistent with a scientific literature that suggests that people respond less critically when evidence is consistent with their beliefs, with much of this literature pertaining to a common reasoning bias referred to as the *confirmation bias* (Gilovich, 1991; Lord, Ross, & Lepper, 1979; Nickerson, 1998). The confirmation bias pertains to the tendency to notice information that is consistent with existing beliefs and to disregard inconsistent information. Participants who believed in mental telepathy prior to participating not only reported a higher level of belief in mental telepathy but they rated items pertaining to using common sense and other subjective processes higher, indicating that intuitive subjective processes were more relevant to evaluating this information when people reported prior beliefs or belief change.

Conclusions

Psy 250 students appear to use a wider range of critical thinking approaches when presented with an article from a scientific source. Interestingly, they do not apply these approaches, as consistently, when presented with an article from a non-scientific source. These results mirror those of Kuhn et al. (2000) in that thinkers favor different approaches across different type of evaluation tasks (different contexts). In other words, they seem to apply the skills that they have been taught for examining scientific research when the information appears to come from a scientific source, but not when it appears to come from a non-scientific source. Psy 250 students may remain at a multiplist level in non-scientific contexts, even though their responses reflect an evaluatist level of epistemological understanding in scientific contexts. However, the majority of Psy 100 students appear to be multiplists in both contexts. Hence, taking a research design course facilitates learning evaluativist approaches, but these skills may not be taped or triggered when information does not appear research-related.

In addition, people with prior beliefs or people who report increasing their belief because of the research summary were dramatically less skeptical than those who did not. In short, these participants appear to find it quite easy to believe in mental telepathy and are less likely to apply a critical skeptical approach to evaluating this information. This group may be resistant, to some extent, to learning critical approaches to claim evaluation. Future studies should continue to focus on the differences between those with and without prior beliefs, particularly with respect to interventions that could facilitate evaluative approaches in the prior-belief group (Gilovich, 1991; Lord et al., 1979; Nickerson, 1998)

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Appendix 1: *Research Summary in Non-Scientific Condition*

Abstract from Dansk, J. & Jones, M. (2002). *New Age*, 24, 132-145.

Telepathy is a type of extrasensory perception or ESP. Telepathy refers to the ability to perceive thoughts from other people without using any of the five senses. This study used the *Ganzfeld* procedure to examine the validity of telepathy. In this procedure, participants sat in a relaxed position listening to white noise through headphones with their eyes completely covered. Because sensory stimuli were masked, this procedure is thought to create a telepathic-receptive state of consciousness. The sender sat in a room some distance from the receiver and never interacted with the participant (the receiver). At a predetermined time, the sender viewed a target picture randomly-selected from a set of four pictures. As she viewed the picture, the sender focused on sending thoughts to the receiver. Ten minutes after the end of this session, the receiver rated the target picture as well as three other pictures. Across ten trials, the ratings for the target picture (the one the sender was looking at) were significantly greater than the ratings for the non-target picture. These results suggest that information had been transmitted telepathically to the receiver, and add to evidence supporting telepathic transmission under experimental conditions.

Dodging Deception with Descartes: God, Human Error, and the Material World

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In the 4th Meditation of *Meditations on First Philosophy*, Descartes seeks to discuss the source of human error and remove God from fault, so as to demonstrate the existence of a non-deceiving God. By this time, Descartes wants to prove beyond what he has established by the 2nd meditation- namely moving on from proof of the existence of himself as a thinker to proof of the existence of the material world (his body included). To do this, though, he needs to prove the existence of a non-deceiving God, so as to assure clear and distinct ideas based on memory are true. A deceiving God could make what seems most clear and evident to reason false. As such, Descartes offers his argument in the 4th Meditation. I argue that Descartes' argument to prove that God is not responsible for human error succeeds in overcoming the objection that it is still an imperfection not to perceive clearly in areas that decision or judgment is required.

Beginning with a brief presentation of his argument, Descartes recognizes that human error in judgment is simultaneously dependent upon two things: the faculty of knowledge or intellect within him and the faculty of choice or freedom of the will. However, the scope of the will is wider than that of the intellect. Instead of him restricting the scope of the will to that which the intellect covers as well, he extends the scope of the will over things that he has no knowledge or understanding of. The will is obviously "indifferent" over such areas that the intellect does not shed light upon, and therefore human error in judgment occurs. To rid himself of human error, he would simply have to restrict his judgments to that which he perceives clearly and distinctly, or that which he has a clear understanding of. If the case is one that is not clear or with which he can either affirm or deny, then he should refrain from using his free will. This "privation" lies in the use of the will by Descartes and not from the will that God gave him. The imperfection lies in his imperfect use of the will, not in God, because God has given him the free will to either make or not make a judgment in cases that he does not fully understand or have knowledge of.

Descartes also discusses a few other minor explanations before presenting the former. He says because he participates in "nothingness" or insofar as he is not the supreme infinite being, then he will go wrong because his faculty of judgment is not infinite like God's is. Therefore the error is not dependent upon God but is simply a defect or privation in Descartes of God's infinite qualities, namely in judgment, knowledge, etc. He then questions why God, a perfect being, did not create him (creation) completely and perfectly in all respects, to which he answers 1) he does not and cannot understand the full reasons why God does what He does, so attempting to do so or making such judgments would be rash and 2) when judging the perfection of a work of God, one must look at the entire universe instead of analyzing the work in its isolation, because what may seem imperfect on its own is actually perfect as it functions in relation to the universe as a whole.

It is possible to object, however, to Descartes' position, by stating it is still an imperfection not to perceive clearly in areas that decision or judgment is required. Even if human error arises due to our extending our will farther than the scope of our intellect, it is still an imperfection of us to not have sufficient understanding in areas where judgment cannot be

suspended. As a result, the author of this imperfection, namely God, would still be at fault for creating faculties that are insufficient at arriving to truth. Thus God is still responsible for human error indirectly. This objection, from the fifth set of objections to the Meditations, was voiced by philosopher Pierre Gassendi.

In response, it is possible for Descartes to simply assert we are not omniscient, and as such it is obvious that we will not have an understanding of everything. He may go on further to admit that we, of course, are imperfect; if we were not then we would simply be God Himself. It does not follow though that God is responsible for human error as a result. Just because we are not omniscient does not mean any mistakes we make as a result should be attributed to God, because we still can understand *enough* to render judgment accurately on many things.

The objector may respond to this with a clarification: the problem is not that we do not perceive clearly in all matters, in which case it may just be attributable to our limited knowledge and imperfection, but that we do not perceive clearly in areas that decision or judgment *is required*. As the objector states, “God is admittedly not to be blamed for giving puny man a faculty of judging that is too small to cope with everything, or even with most things or the most important things; but this still leaves room to wonder why he gave man a faculty which is uncertain, confused and inadequate even for the few matters which he did want us to decide upon,” (91).

Although Descartes does not directly address this objection in his reply, he does address it indirectly in the 4th Meditation. He states what we view as an imperfection may not really be an imperfection in the larger scheme of things, namely in relation to the universe as a whole. Perfection may be found if one looks at God’s creation as a whole; thus although it may seem as though He is an imperfect being when analyzed in isolation, in reality He may play a perfect role in the wider context of a perfect universe. Thus, in sum, we are ignorant of God’s greater wisdom behind what we see as an “imperfection.”

I find this response by Descartes weak and insufficient in adequately responding to the objection. Saying “God knows better” is not really an answer to the question but just an appeal to faith in God and His Omniscience. The objector, however, may or may not believe in such a God, so Descartes cannot rely on this to respond to the objection. He has to at least *show* how it is that it is not an imperfection in the grander scheme of the universe. He would need to provide an adequate explanation as to how our allegedly “imperfect” faculties and beings actually fit perfectly with some larger plan of the universe, and as such they would no longer be deemed an imperfection. Descartes fails to do this, however, and resolves in simply placing trust in God’s omniscience and wise plan. Although, for a theist, this may be a convincing response, Descartes cannot assume the existence of a non-deceiving, omniscient, all-wise God in the process of attempting to prove that God is non-deceiving. This would be considered circular, and begging the very question of whether God is indeed non-deceiving.

There is perhaps a better way for Descartes to respond to the objector. The objector wants Descartes to assume our understanding is not sufficient to render accurate judgment in areas God wants us to decide upon. Firstly, the objector needs to be clearer as to what these areas are, so that Descartes can analyze whether or not there is indeed sufficient understanding to render judgment accurately. Perhaps there is sufficient understanding, and any inaccurate judgments that are rendered are simply attributable to human shortcomings in using the faculties. Suppose the objector was to offer several examples in response, such as deciding how best to live our lives, or what the correct conception and method of worship of God is. Surely these seem to be matters God wants us to render judgment in, and yet we find a wide variety of views on these

matters from people who all believe in God. It seems like our faculties are not sufficient in discerning the accurate idea in these areas. In response, even in these cases, logic and reason could lead one to an appropriate conception of God, because it seems like many of the conceptions could be demonstrated false by logical contradiction or some other rational reason. Admittedly, though, there still remain cases where reason will not necessarily lead one to the accurate answer, and even if it does, it may not lead to absolute certainty in its truth. However, even in such cases, it would not follow that God is deceiving us. It would only follow that God did not give us sufficient means to find the truth in all cases, not that He was intentionally and actively feeding us false information, as would be the case with deception.

Secondly, the assumption that our understanding is not enough to render accurate judgment in areas God wants us to decide upon cannot be accepted anyway because one or the other must necessarily be false: God cannot want/command us to decide upon certain areas and yet simultaneously not give us the tools to realize what He wants/commands for us to render judgment upon. If He did want us to decide in such areas nonetheless, then God would be an Unjust God, and that would be the proper conclusion, not that God is a deceiving God. It would be unjust upon His part to demand something that is not within our capacity to achieve. Nonetheless, proceeding for sake of argument, injustice is not one of the attributes Descartes gives to God, so there must be something wrong with the assumption the objector is asking Descartes to accept.

Thus, assuming God did give us sufficient tools to render judgment accurately in such cases, then the cause of human error must be our own insufficient effort in gathering the appropriate information and making an informed decision. Or perhaps we gathered enough information but allowed our emotions to influence our will, or the judgment we made. Many times, the truth may be clear to us, but the truth may go against various interests we may have, and as a result our judgment does not accord with the truth but with that which we are more (emotionally or otherwise) inclined to choose. So we are responsible for our own error in both cases. This explanation is somewhat similar to Descartes' original explanation for the cause of human error, in that the source of the error is not God but humans.

The objector may respond again here. In saying we have the sufficient capacity to render judgment in areas we are expected to by God, then is that not also admitting that our faculties are *still* imperfect (to render judgment in other areas)? If so, is it not an imperfection upon God's part to create an imperfection in us, even if that imperfection may not impede us in giving judgments in areas we are expected to?

In response, firstly, our faculties of understanding and will are imperfect relative to God but not imperfect relative to the universe and the tasks they are meant to accomplish. If we were given tasks we could not achieve with our "imperfect" faculties, then yes they would be deemed imperfect. But the tasks they are meant to accomplish do not make them imperfect. Secondly, even if we were to assume our faculties are imperfect, it is not an imperfection upon the part of a Creator to not create something perfect if the Creator willed it to be so. I can choose to create a perfect dinner or a mediocre dinner, but if I choose the latter, that does not mean *I'm* therefore imperfect, just that I chose to make something imperfect, for whatever reason.

It is possible for the objector to respond one last time, asserting God gave us finite knowledge, which may lead to our inability to find the truth in some areas. As a result, is He not then to blame for this imperfection? In response, again, the objector is assuming it is an imperfection, when this may not be so, for the same reasons discussed in response to the supposed imperfection of the faculties (imperfection relative to God but not to the universe). But

even if our finite knowledge was an imperfection, God would not be *blameworthy*. That would be like saying person X gave a certain amount of money in charity to build a hospital but should be blamed because he did not give more. Furthermore, no one would blame the donator for not giving enough to build the entire hospital. Similarly, although the assumption is that God did give us adequate faculties, even if He did not, He would not be blameworthy. It seems as though He should be praiseworthy for that which He did give, with the recipients being appreciative for what they received and not blaming for how much they did not. In any event, even if He was blameworthy for giving us finite knowledge, it would not follow that God was *deceiving* us, as deception entails a sort of intentional giving of false information.

Thus, as has been seen, Descartes' argument to prove that God is not responsible for human error succeeds in overcoming the objection that it is still an imperfection not to perceive clearly in areas that decision or judgment is required.

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Predictors of Success for Program Completion of a Baccalaureate Nursing Program

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Background

As the healthcare industry faces an increasing shortage of registered nurses, nursing schools are challenged with how best to use their resources to select quality candidates. Before individuals can enter the nursing profession and begin working as a registered nurse (RN) they must: graduate from a recognized nursing program, meet the specific requirements from their state's board of nursing, and pass the National Council Licensure Examination (NCLEX) issued by the National Council of State Boards of Nursing (NCSBN). Identifying the factors that are the best predictors of success within their nursing program is a goal of each selection committee.

Assessing nursing programs for these predictors is complex. Curriculums are often in a process of continuous evolution, and the spectrum and number of academic and nonacademic variables that affect success have increased. As well, while there are required curriculums and standards for all nursing programs, each nursing school is unique in their environment, students, faculty, and clinical experiences. As a result, identifying predictors of success within a particular program is also a unique process.

Literature Review

The literature has some important findings to guide research studies on predictors for NCLEX success. Commonly tested variables such as pre-admission and nursing program grade point averages (GPAs), demographics, pre-requisite and program course grades, and standardized test scores have all shown to be independently predictive in separate studies.

In a meta-analysis of 47 research studies related to predicting nursing student success, Campbell and Dickson (1996) identified GPAs for nursing and pre-nursing science courses as the most significant cognitive predictors of NCLEX success, and parental education and age of student as the best demographic predictors.

Alexander and Brophy (1997) performed a five year study of NCLEX-RN performance for nursing graduates from a two year associate degree program. The strongest predictors of success for NCLEX success were SAT verbal scores, cumulative program GPA, and test scores from the National League of Nursing (NLN) Comprehensive Achievement Test. Three nursing program course grades combined with NLN test scores were found to be strong predictive models for NCLEX success when analyzed through logistic regression. Those courses were Childbearing (Maternity), Nursing Adult I, and Mental Health (Psychiatric). They also reported that no significant correlations were found between NCLEX success and the age of the student, or pre-nursing data variables.

Daley, et al. (2003) analyzed student demographics, nursing program variables, and standardized test scores to evaluate differences between those who passed the NCLEX with those who failed. Data were collected from two cohorts of graduating seniors (N=121; N=103) from the baccalaureate nursing program at the Ohio State College of Nursing. Two nursing program variables, the course grade for a senior-level adult med-surgical course and the cumulative program GPA, were identified as consistent predictors of NCLEX success for the two cohorts

they studied. Scores from two standardized tests, the Mosby AssessTest and the Health Education Systems, Incorporated (HESI) Exit Examination, were evaluated as predictors for NCLEX success. Both standardized tests provided significantly different scores for those who passed and failed the NCLEX, with the HESI Exit Examination demonstrating more sensitivity, and positive and negative predictive value than the Mosby AssessTest scores.

Except for cumulative program GPA, the findings to predict NCLEX success are varied and there is little replication of findings across studies. Until more research is conducted that consistently supports the best predictors, studies need to blend findings from the research literature with specific qualities of a nursing program.

Research Questions

When developing research questions for this project, the goal was focused on student attributes predicting program completion, and identifying the program's predictors of success on the licensing exam (NCLEX). By using a departmental database that contains variables commonly studied in the literature, the nursing department is hoping the data analysis and subsequent findings will help guide the selection process, and improve the success of graduates when taking the NCLEX. For the University of Michigan - Flint's BSN Nursing Program, the following research questions were developed: What are the best predictors for success on program completion? What are the best predictors for success on the NCLEX examination? What are the descriptive characteristics of those who do not complete the program?

Data Collection and Analysis

Data were collected from 8 consecutive nursing cohorts. The database consists of demographics, pre-admission and program GPAs, Nursing Entrance Test (NET) scores, pre-requisite and core curriculum course grades, and NCLEX results. The process of collecting, entering, and evaluating the quality of the data was labor intensive, tedious, and is an ongoing effort. Originally created to record the progression of students in the program, the data were not originally entered with the stringency or intent of being statistically analyzed and researched. As a result, a protocol or procedure for entering data did not exist and errors were found in a randomized check of the data. Because the accuracy of the data was determined to be questionable, all data were reentered and checked for accuracy. All demographic data were verified using the university's computer database, and registrar records were used to recompile the data on pre-admission and core curriculum course grades. Data verification and entry was carefully performed by two trained individuals.

When examining NCLEX results, the source of the information varied within the sample. Until recently, NCLEX results were not reported to nursing programs in a manner in which specific students or cohorts could be distinguished. Previously, the NCLEX results only reported the percentage pass rate for the entire program and all test takers from the university were grouped together regardless of graduation date. As of October 2000, the University of Michigan - Flint has received NCLEX reports that identify individual students and their success on the exam. As a result, a portion of the database prior to that reporting date had to be removed from the sample examining NCLEX success. While some data existed on the cohorts from the early NCLEX reporting system, it was primarily collected from word of mouth reports and from observations of graduates in the local nursing workforce. Several cases in each cohort in the database with the early reporting method had missing NCLEX data. Of those students who had NCLEX data, only 3 reported having not passed the exam. It appeared the data were biased because there were few who had not passed the exam and the missing data could contain more.

To avoid sample bias, cohorts from the earlier NCLEX reporting system were removed

from the research sample. However, those cohorts remained in the sample for analysis about program completion as graduation from the program could be verified for all the students. The final sample size for program completion analysis was (N=203). Data were analyzed using the SPSS statistical software program (Version 13.0).

Results

Statistical analysis is currently being conducted on predictive variables for program completion and NCLEX success and will not be reported within this paper. The results will focus on descriptive statistics for cohorts in which data exists for their graduation status from the nursing program. As well, descriptive statistics for the attrition group will be compared against the statistics of the overall sample.

The following table represents descriptive statistics for the sample of students who completed the Baccalaureate of Science Nursing Program (BSN). The University of Michigan – Flint campus is located in Genesee County, and the proximity to university statistics describes county locations of the permanent addresses for the sample.

Table 1: Descriptive Variable Statistics for Baccalaureate Sample (N = 203).

Age		
Mean	28.46	
Standard Deviation	7.68	
Age Range	19-53	
Gender		
Females	88.2%	179/203
Males	11.8%	24/203
Ethnicity		
White/Caucasian	79.3%	161/203
African American/Black	8.9%	18/203
Multi-Racial/Multi-Ethnic	7.4%	15/203
Hispanic/Latino	3.4%	7/203
Native American	1.0%	2/203
Proximity to University		
Genesee	64.5%	
Adjacent County	29.1%	
Other	6.4%	

Of the sample (N=203), 151 students (74.4%) completed the 6 semester nursing program. The attrition group was comprised of 52 students (25.6%). The chart depicts the attrition occurrence by semester. The attrition group is described by their final attempted semester within the program. The first semester of the program accounted for the largest value of attrition, with 32.7% of the attrition group leaving the program at this time. Of the attrition group, 15.4% did not progress far enough to have received a grade for the first semester courses.

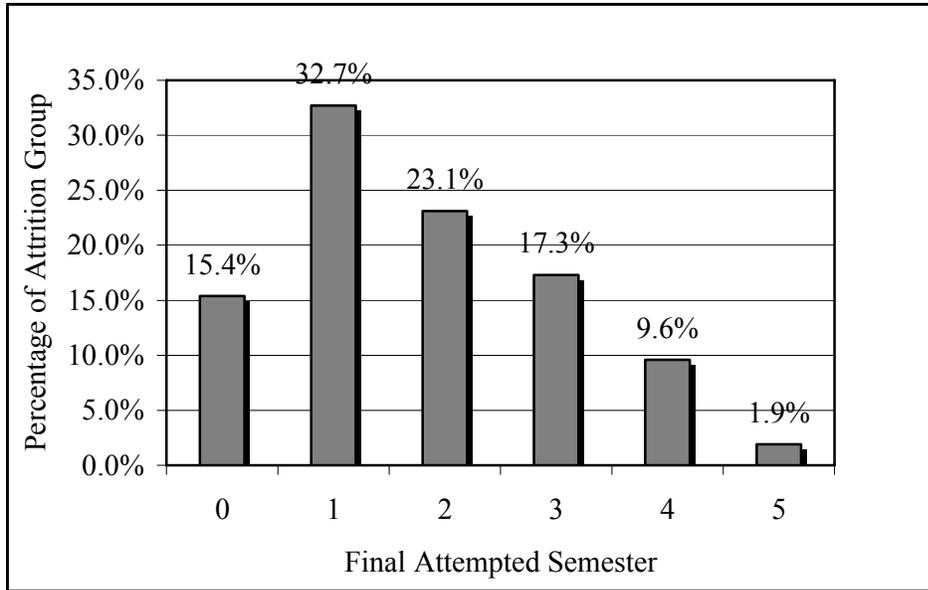


Figure 1: Attrition Occurrence by Semester. Displayed As Percentage of Attrition Group in Relation to Final Attempted Semester.

The following is a comparison of descriptive statistics between a portion of the attrition group (N = 52) and the total sample (N = 203).

Table 2: Attrition Sample Attributes (N = 52) vs. Overall Sample Attributes (N = 203).

Mean Age		
Attrition Group	30.87	SD 9.598
Total Group	28.46	SD 7.678
Attribute Change*	(+2.41)	(+1.92)
Men		
Attrition Group	23.1%	12/52
Total Group	11.8%	24/203
Attribute Change*	(+11.3%)	
African Americans		
Attrition Group	19.2%	10/52
Total Group	8.9%	18/203
Attribute Change*	(+10.3%)	
Hispanics		
Attrition Group	5.8%	3/52

*Attribute Change is defined as the difference in representation between the attrition group and the total group. (Age: $30.87 - 28.46 = +2.41$)

Discussion

Descriptive statistics from the attrition group suggest that age, gender, and ethnicity are important variables regarding attrition for the program. Those who were older, male, African American, or Hispanic were more vulnerable to attrition. The age for the attrition group had a

higher mean than the overall sample (+2.41 years), and had larger variance as found through a higher standard deviation (+1.92 years). For men, African Americans, and Hispanics, their composition within the attrition group grew and represented a larger percentage of the group when compared to their overall composition in the sample group. Initially representing 11.8% of the sample group, the men's representation grew to 23.1% in the attrition group marking a +11.3% attribute increase. Initially representing 8.9% of the sample group, the African American representation grew to 19.2% in the attrition group marking a +10.3% attribute increase. Initially representing 3.4% of the sample group, the Hispanic representation grew to 5.8% in the attrition group marking a +2.4% attribute increase.

Previous findings in the literature concerning ethnicity focus primarily on predictors for NCLEX success. In a study conducted by Endres (1997), predictors of success on the NCLEX were evaluated for African American, foreign-born, and white nursing school graduates. To identify potential differences in predictors between the groups a random sample of 50 students from each group was selected from a population of 1,205 students. Analyzing data collected from school records, no differences were identified in predictors for NCLEX pass or fail rates between the groups. The study did not evaluate predictors of success for program completion between the groups.

The findings concerning the program attrition rate does not distinguish between those leaving the program due to academic versus personal reasons. Because the cause for program attrition is not captured in the database, understanding the reasons leading to departure from the program is impossible to determine. Students leave the program due to a myriad of factors that extend beyond academic failure and evaluating their roles is not currently measurable in the program's population.

Recommendations

If the analysis of attrition data holds true, early and ongoing interventions are needed for students at risk for attrition. In a controlled study conducted by Ashley and O'Neil (1991), preliminary evidence suggests that a long-term intervention designed to enhance performance for high-risk students was effective in assisting those students pass the NCLEX. The so-called process of "weeding out" students must be eliminated from the mindset of nursing programs. As a collective, nursing programs must exert more effort to select well prepared candidates who understand their personal ambitions to succeed, nurture the growth of those students, and produce competent nursing professionals. Once a program has admitted students, the focus should be on providing the resources to help them succeed.

In the meta-analysis conducted by Campbell and Dickson (1996), interventions for at-risk nursing program students such as support groups, computer-assisted instruction, and personalized instruction structures all demonstrated some significance and role in predicting NCLEX success. Their findings also identified the significance of pre-requisite science courses in the success of nursing curriculum courses which require the mastery of that content. Because of this relationship, "...interventions designed to increase student success should begin at the pre-nursing level." The data suggest that pre-nursing GPAs in science courses determine future GPAs in nursing courses.

Recommendations include an ongoing study of program attrition including reasons students leave the program. Programs may consider creating an anonymous exit questionnaire, or perform an exit interview for those leaving the program. As well, evaluating student success and program satisfaction on a continued basis may help identify students who are at risk for attrition. Assessment data gathered from developed faculty advisor relationships, and the utilization of a

mentorship program may provide early indications of student difficulties.

Also recommended is the development of intervention programs or the utilization of established programs by each nursing program. Developed by the Saint Xavier College School of Nursing, the Partnership for Learning and Utmost Success (PLUS) retention program provides academic support for students and is built into the college's curriculum through six 1-credit hour courses in nursing. In their evaluation of the program, Lockie and Burke (1999) found the program to be a significant variable in program completion for at risk students.

The importance of standards for data entry must be addressed. For an accurate statistical evaluation of a program, the information on which decisions are made must be stringent and carefully checked for accuracy. Academic grades and pre-admission variables must be accurately and diligently recorded. The use of one person for data entry and a second person to help verify the data entered into the database is one standard in which data accuracy may be improved. As well, nursing programs must be creative in identifying, measuring and recording non-academic variables that influence success. To attain these standards a protocol for data measurement and data entry should be established and maintained by the department's administration. Once this lengthy process is established, an ongoing analysis of the data could provide the means in which the program and its future progeny can flourish.

Conclusion

Due to the complex nature of the nursing profession, the progression of the healthcare industry, and the academic and technological advances furthering our understanding of patient care, nursing programs must maintain a fluid curriculum to remain in alignment with an evolving healthcare environment. As the healthcare industry continues to progress forward, nursing programs must assess, anticipate, and prepare its students with the knowledge necessary to synergistically adapt to a moving target. As the profession and nursing programs make these adaptations, identified predictors for success in program completion and NCLEX success also become a moving target.

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Western Representations of Muslim Women
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The study of Muslim women has been very controversial in the last few years. After the September 11th attacks, Islam became under the scope of criticism. Muslim women were also put under the scope as well, especially in Afghanistan. The US media put Afghani women as one of the reasons to enter Afghanistan and thus start the "War on Terrorism." Afghanistan, being a predominantly Muslim country, showed that Muslim Afghani women, and Muslim women in general, were somehow oppressed by Islam. The Western media portrays this idea significantly, and especially in America's most trusted newspapers: *The New York Times* and *The Washington Post*. As I read through the articles that pertain to Muslim women after 9/11 in these two prominent newspapers, I discovered that Muslim women are still being shown as oppressed by their religion, either stating it directly or indirectly. The main themes that were being expressed about Muslim women in these articles is the Woman's hijab or headdress, Muslim woman being victims of Islamic double-standards, and Muslim women being oppressed in general by their religion.

Theme #1: Muslim Women's Attire

Most of the articles that pertained to Muslim women were about the hijab and the hijab ban in France. The hijab over the years, has been the most talked about subject, as Asma Barlas says in her book " 'Believing Women' in Islam", "The veil has become so overinvested with meaning that one can no longer speak of it in any simple way" (57). That is very true because there are so many different reasons on why the hijab is being worn. In Iran, women were wearing the hijab to show their patriotism and to show defiance to the West (Moghissi 101). Nowadays in Iraq, the hijab is being worn for protection as stated in *The Washington Post*, "The whole point of wearing the scarves now was to be anonymous and unimportant, to avoid being singled out and followed, or kidnapped, or shot. It was more than a matter of blending in" (Spinner A15). In a war-torn homeland in which everything is going completely haywire, women are resorting to hijab for protection.

However, most of the time and especially in the West, Muslim women who wear the hijab do so because they believe that it is mandated by their religion and they wear it as a sign of obedience to God. As a Muslim woman who was raised in America, I wear the hijab because of exactly that reason. Muslim women like myself are not forced to wear it, neither do they hate wearing it. However, the media does not give us justice by representing us often in the media.

Earlier last year, France passed a law that banned people of different religions to wear their symbols in public schools or in the work place. That meant that that Muslim women could no longer wear their hijabs in such settings. This created a great stir in the Muslim community in France. In *The New York Times*, an article called "Religious Symbols in France" quotes:

Mr. Chirac depicted France as a land in which diverse people were joined in a common identity that would be endangered by the release of religious centrifugal forces, by the celebration of distinctions that served to separate and not unite. The danger, he declared, was division, discrimination and confrontation (A42).

Many things are wrong with this law like all people should look the same to eliminate discrimination. To treat discrimination, it is not wise to deny people of different backgrounds to

hide their beliefs and values, rather, the society should be taught to embrace diversity. Regardless of whether the law was good or bad, the aftermath of the ratification of the law gives new information about Muslim women, especially with regards to wearing the hijab. What is different about this incident is that Muslim women are demanding their rights to wear the hijab, contrary to the popular notion that Muslim women are forced to wear it. In *The New York Times*, it is quoted, “And perhaps the law-and-order interior minister can be forgiven for overlooking the shopping bags on sale at a score of kiosks, the ones with the silhouette of a woman wearing a veil and the phrase 'I love my veil' in English and Arabic” (Sciolino A4). This showed the world that many Muslim women believe in the hijab as a part of their religion, and will do anything to secure that right to wear it. These women are not forced at all, rather they are forced not to wear it by their governments and that created a lot of problems. It actually made Muslim women who do wear it subject to more discrimination and intolerance. In *The Washington Post*, the story of Fatima Yakoub, a Muslim Moroccan girl living in the Netherlands, is presented. She willingly chooses to wear the hijab and as a consequence, she is very much discriminated against, “Whenever she left her largely Muslim immigrant neighborhood, she discovered that the scarf, known in Arabic as hijab, marked her as a subjugated Muslim woman, foreigner, or buitenlander in Dutch” (Richburg A01). Now the tables have turned, and instead of Muslim women being forced to wear the hijab and persecuted for their refusal, they are being persecuted for wearing it. Fatima stays wearing the hijab despite the society's intolerance, “ ‘Try to hold on,’ he told his daughter. ‘And if they continue to treat you this way, you can take off your head scarf.’ But Fatima was stubborn. ‘I do this for my belief,’ she said. ‘I love Islam. Islam for me is everything. Allah for me is everything. I couldn't give it up.’” This showed the side of Muslim women that is seldom shown in the media.

The American media also shows the different side of hijab that is always shown. This kind of hijab is called the “burqa” and is forced on women living in Afghanistan. The burqa is, “a head-to-toe shroud that hides even the feet” (Barlas 54). Western media continues to make fun of this garment and overemphasize its affects. It is also emphasized that if the women refuse to wear it, they would be greatly punished. “Trying to push from consciousness its colonial past, the West seemed in the grip of an overpowering urge to demonize the Muslims and Arabs for what is saw as high-point of their difference with the West” (Moghissi 37). Making Muslims seem like uncivilized and oppressive people that treated their women horribly was a good way to make the public forget about the wrongdoings of the West. For example, after 9/11, the Western media has emphasized the terrible status of women in the Taliban regime. It was to make the public forget about the real reasons why the US would possibly fight the war on “terrorism” in Afghanistan and now in the Southwest Asian countries. Of course, to make things more dramatic, the Taliban were ruling in the name of “Islam.” An article in *The New York Times* called “In New Leader’s Village, Taliban Rules are Just Tradition“ says, “The burka -- the gown that, to Westerners, came to symbolize the Taliban’s unbending Islamic rule” (Onishi B1). If one studies Islam, they will see this “unbending Islamic rule” in a different light. First of all, in Islam, no one is forced to believe in anything. Islam promotes free-will, as said in the Quran, “There is no compulsion in religion” (3:256). Therefore, a true Muslim cannot force someone to convert to Islam or force women to wear the hijab (or in this case the burqa). The media made it obvious that the Taliban rule went to extremes, but it seemed like a plan by the US to keep everything going the way it wanted in that region. Thus, women and their horrible “difference” from the women of the US became a tactic that worked well for them at a time of war that was and still is questionable.

The burqa is extremely emphasized that it is terrible and horrific. Nevertheless, even after

the Taliban regime was overthrown, many Afghani women still wear the burqa. This is something that the US does not understand, “Women are no longer required to wear the burka, but they do anyway. Every woman on the streets in Kabul still looks like a shrouded ghost” (Kristof A27). One writer was so outraged at how the Afghani women reacted after the Taliban left that she wrote what *she* would have done if she were in their place. She wrote, “The day after the Taliban fled Kabul, I saw a picture in the newspaper of how the women were celebrating their new freedom: washing clothes in the Kabul River. Excuse me, but that’s not exactly the first thing I would do after five years of house arrest. Maybe it’s because I was raised on Mary Tyler Moore, but I’d like to have seen someone throwing her burka into the air” (Galant 14). It *is* because she was raised on Mary Tyler Moore! When Afghani women were asked why they did not take off their burqas, they replied, “We will never take off our burkas because this is tradition for us” (Onishi B1). These women want to wear the burqas, even after they were assured that they didn’t have to. It is a part of their culture and many of the women chose to keep with their traditions. To the normal Euro-American, such behavior is incommensurable. They actually thought that Afghani women couldn’t wait to rip the burqa off their bodies and wear tank tops and shorts. That is a very naïve way of thinking. It should not be expected that the Afghanis, or any other group of people who are foreign to American culture, to just automatically be Afghani one second and then suddenly become American in the next. If an Afghani woman wants to wear a burka, by all means, she should be able to do so. If she doesn’t want to, then she shouldn’t be forced either. Isn’t it an American value to let people have the freedom to make their own choices?

Alvin W. Gouldner, a social theorist, once wrote in his piece called “Toward a Reflexive Sociology,” “A Reflexive Sociology means that we sociologists must - at the very least - acquire the ingrained habit of viewing our own beliefs as we now view those held by others (423). What Gouldner says is that we should view other people in other worlds in an open-minded way. We should realize that the world has many different people with many different values, customs, and beliefs. We cannot expect the whole world to think like Americans or to wish that they were like Americans.

Debra Galant obviously did not understand this valuable point. Her whole article called “One Jersey Girl’s Advice to Afghan Women” is extremely narrow-minded. She tells the Afghani women to live the way she does; as a middle-class soccer mom living with her well-off husband. She goes on to criticize saying, “Most of the women I know go crazy if they’re stuck in their house with the kids for three days during a blizzard. Or what about the threat of having your fingernails pulled out if you’re caught with nail polish? Here in New Jersey, nail salon capital of the western world, I have friends who would give up their children before they gave up their weekly manicure appointments. And what about those truly dreadful outfits?” (14). There are many things wrong with this paragraph. Firstly, she cannot compare herself with women who live in different parts of the world with different values. Secondly, I guarantee that there will be Afghani women who will, after reading this paragraph, stop and think how foolish American women are who would “give up their children before they gave up their weekly manicure appointments.” Afghani women lived through many hardships such as war, and they know how it is like to see a close family member like a son or a husband to die. They could care less about manicures, going shopping or taking their kids to soccer. And those “dreadful outfits” are dreadful to Galant, but not necessarily to them. They are more concerned for their lives and their family’s lives than to care about their own leisure.

In her article, Galant goes on and gives Afghani women tips for their new life without the

Taliban, “Forget the river. If you have to wash clothes, call Sears to send over a Kenmore. Better yet, delegate. Have Mohammad do it”(14). Again, the world does not revolve around the American way of life. Even in America, 32% of households are single-parent households. That means that Jennifer can’t tell Muhammad or Tim to do the laundry for her. Afghanistan does not have Sears or Kenmore washing machines either. Even if it did, the majority of the people will not buy them because they can’t afford them. She has to remember that the majority of Afghans live in extreme poverty. Most don’t even have electricity in their homes before even thinking about having washing machines. Galant’s article is a complete mistake which showed a lack of empathy towards the situation of the people of Afghanistan.

What the Euro-American society does not understand is that Muslim women in the Muslim dominated countries who actually are ill-treated, should change their situation the way they see fit according to their desires. That also means that their desires are different than those of the West's. What the West does not understand is that it cannot enforce its ideas and culture on a people that live totally different lives. Nancy Hartsock, a social theorist, explained, “We need to develop our understanding of difference by creating a situation in which hitherto marginalized groups can name themselves, speak for themselves, and participate in defining terms of interaction” (488). If the West doesn't like the way Muslim women live in some Muslim dominated countries, then let the women themselves express their concerns and their ideas to eliminate the problems they deal with. Other people that do not understand their way of life should not do this in their place.

Theme #2: “Islamic” Double-Standards

Another major theme that *The New York Times* and *The Washington Post* had about Muslim women was the "Islamic" double-standards. The media showed that Muslim men were more privileged than Muslim women. The articles, however, did not make it clear that these double-standards were cultural practices and not Islamic practices or beliefs. Many Muslim dominated countries do have these double-standards, but unfortunately, it is mostly associated with Islam, but when one studies Islam, these apparent double-standards do not exist.

It is also important to note that like the various peoples of the US, the rest of the world is also heterogeneous. There is no such thing as the typical “third world” woman. One cannot generalize that all women that live in a certain area in the world have the same lifestyle and ideas. A social theorist explained, “One must nevertheless insist that the colonized subaltern *subject* is irretrievably heterogeneous” (Spivak 531). The Western media mostly represents Muslim women as somehow ill-treated and submissive to men. There may be women that have these characteristics, but one cannot say that all Muslim women are that way. To generalize people that live in different parts of the world would show total ignorance.

In this part of the study, the study of Islam becomes extremely important to compare Islamic teachings to the cultural practices that occur in the countries in which there are double-standards. Muslims are governed by the holy book of the Muslims called the Quran and the tradition of the prophet. All Islamic laws come from these two sources, and studying these sources would be crucial to better understand Islam in comparison to culture. The main issue that is brought up here are honor killings or fathers threatening their daughters that they would kill them if they found their daughters defaming the family’s honor by dating a man or in some cases, just speaking with members of the opposite sex. In *The New York Times*, it is quoted: “Many men who commit honor killings cite the Koran,” (“Honor Killings”14). This article makes it seem like honor killings is a norm in Muslim dominated countries. Another example that is represented is that an Afghani father explained his intentions if he ever saw his daughter

defaming the family honor, “There were limits, however. He did not want girls to become free of their father’s control once they turned 18 years old. He did not want them to go, as they do in America, to nightclubs. ‘If that happened,’ Mr. Muhammad said, pulling an imaginary trigger with his right index finger, ‘I would shoot her’ (Onishi B1). *The New York Times* also shows how Irshad Manji, was compelled to write her book called *The Trouble With Islam*. The “Islamic” double-standard motivated her to think of such a title when she explained, “When I see a woman in Nigeria getting sentenced to 180 lashes for premarital sex, despite the fact that she’s produced several witnesses confirming that she was raped, it is my responsibility as a Muslim to speak out” (Krauss A4). Such ideas the media gives to the public are not usually compared to those of the Islamic teachings. The public is usually left with bad ideas about Islam and that it treats women horribly.

In the Western media, public punishments like lashing and stoning usually happen to women. Men are seldom mentioned in these punishments. That is a reality to some parts of the Muslim world because culturally, males do not threaten the honor of the family, “Moreover, boys do not have to be supervised very closely, since their sexual behavior cannot dishonor the family or compromise their chances of marriage” (Minai 84) and “An adulterous man often escaped the public whipping Islam decreed for him” (Minai 144). The male, culturally, does not have to prove his virginity on the wedding night, but a girl does. Since sexuality was connected with honor, a girl had to be more shielded from going near such acts, even though in Islam, it is forbidden for both the female and the male, “Islam’s liberal naturalistic view of sexuality, however, has been overshadowed by the patriarch’s traditional awe of woman’s power” and “Since she was too irresponsible to control herself, he had to build fences around her” (Minai 143). To any devout Muslim, the verses that explain the punishment for sex before marriage is highlighted in the Quran, “The woman and the man guilty of fornication, flog each of them with a hundred stripes” (24:02). Moreover, in a country that is governed by true Islamic law (and there are no countries like that in the world currently) one must bring four witnesses to prove that the person actually committed fornication, as said in the Quran, “And those who launch a charge against chaste women, and produce not four witnesses (to support their allegations), - flog them with eighty stripes; and reject their evidence ever after: for such men are wicked transgressors” (24:04). So according to the Islamic law, a father that kills his daughter after he suspects that she is threatening the family honor, gets eighty lashes. Even if she *did* commit fornication and he was the only person that was sure that she did, he still gets eighty lashes. The girl does not get punished. The Quranic commentary explains the verse, “The most serious notice is taken of people who put forward slanders or scandalous suggestions about women without adequate evidence. If anything is said against a woman’s chastity, it should be supported by evidence twice as strong as would ordinarily be required for business transactions, or even in murder cases” (Ali 1003). The Quranic commentary recognizes that women are more likely to be accused with their honor more than men. Because some Muslim dominated societies have forgotten this important verse, things such as honor killings and complete seclusion of women come to play. Even the Quran recognized what was mentioned earlier, that the females are more likely to be accused of dishonoring the family more than the male. This verse’s purpose was to protect women from just those kinds of abuses, which are completely un-Islamic, yet the media makes it seem like it completely is!

As for the Nigerian girl that was given 180 lashes because the judge thought that she committed fornication but she was really raped is completely un-Islamic as well. First of all, even if four witnesses were brought and she did in fact commit fornication, she wouldn’t get 180

lashes, she would get 100. Also, her partner would be punished. There is no mention of the partner at all. Secondly and more importantly, seven witnesses said that she was raped, and if a girl is raped, the rapist gets the biggest punishment under Islamic law - he is killed. The girl in no way is punished (Badr. Online posting. 23 June 2002). In fact, a raped woman do not need to bring four witnesses either, “A woman who has been raped cannot be asked to produce witnesses; her claim shall be accepted unless there are tangible grounds to prove otherwise” (Kutty. Online posting. 29 Aug 2004). Thus, the punishment that the Nigerian legal system decreed (that claimed to be following Islam) is utterly un-Islamic. The media did not make this valuable point clear.

Unfortunately, Irshad Manji did not exactly start off her book with a good understanding of Islam. Instead, she titled her book *The Trouble With Islam*. The book should be titled, “The Trouble With Muslims” because it is not Islam that lays down such oppressive laws on women, it is the way certain Muslims behave. Throughout history, patriarchy had prevailed all over the world, and also in the Muslim dominated countries. This lead to interpretations of the religion that made it more fit for men to dominate, “Muslim women are not aware that their Islamic rights have been violated by the male-centered societies in which they live” (Moghissi 40).

Theme #3: Muslim Women are Generally Oppressed

The last theme of the articles about Muslim women is that Muslim women are oppressed in general in all matters. For decades, this ideology had been and still is, dominating Western media. *The New York Times* has articles that give this notion of women being inferior. One writer exclaimed, “The University of North Carolina students assigned to read a book about the Koran, and students elsewhere, should consider the claims of politically correct Western academics about the benign nature of Islam in light of the barbarity Islam is Perpetuating around the world, especially against women” (Schaeffer A16). This quote gives the idea that Islam is a barbaric and uncivilized religion that treats women badly. Again, the ideology of “we” are more civilized and “they” are barbarians comes to play. This comment is also very fascist, suggesting that the world would be better off without Islam.

In Holland, a film was created that suggested that Muslim women were oppressed through Islam. Many Muslims were completely outraged by this movie, “In Rotterdam, where the annual film festival devoted mainly to young, independent filmmakers opened last week, the anger over the withdrawal of the Van Gogh film continued. The short film, titled ‘Submission,’ used words of the Koran written on the back, stomach and legs of partly dressed women to denounce oppression of women in the name of the Koran. It provoked widespread Muslim anger when it was televised last fall” (Simons A4). The way the movie was set up is offensive to Muslims because nakedness, or being scantily dressed, for both women and men is prohibited. So showing a prohibition in Islam and on top of that, putting verses from the Quran and relating the whole scenario to Islam is completely unacceptable to Muslims. The filmmaker needed to be more considerate of the Muslims’ feelings before making such a movie.

Women being oppressed by Islam have always been a rule of thumb in the West. So far, the role of Islam and women has not been mentioned significantly, but there are many verses in the Quran and the tradition of Muhammad that say quite the contrary. The image of women being oppressed is actually true (but also overemphasized in the media), and in many cases, they are oppressed in the name of Islam as Asma Barlas explained, “My argument so far has been not that we cannot read the Quran in patriarchal or oppressive modes, but that such readings result from reading the text in a piecemeal and decontextualized way” (169). As mentioned earlier, through history, there have been some Muslim scholars who had a patriarchal mindset and

interpreted the Quran and the tradition of the prophet the way they saw fit to keep them in power. The Quran itself does not promote such ideologies, rather, it threatens it. There are many verses in the Quran that show the equality of women and men as human beings in the eyes of God, "The Qur'an does not consider woman a type of man in the presentation of its major themes. Man and woman are two categories of the human species given the same or equal consideration and endowed with the same equal potential" (Wadud 15). There are many different sayings of Muhammad that preached treating women well. A few examples: "Whoever doth good to girls, it will be a curtain to him from hellfire" and "None but a noble man treats women in good terms and none but a foolish man treats them badly."

Conclusions

The Western media does not explain the stance of Islam in regards to women sufficiently. Unfortunately, the things that are being propagated are basically that women are subordinate to men in Islam and men are entitled to abuse them. The media chooses certain information about women in Muslim dominated countries that do not represent the whole population. As a result, those who follow the media are not getting all the right information. When that is being said, it shows the dire need of people to do their research on the true position that Islam has for women. When the media presents something, the public is vulnerable to believe what is being presented, and if what is presented is false, the public will follow things blindly without prior knowledge. That is why the media has a great impact on the way a society thinks and behaves, and it is the responsibility of the media to clear up the many false things that it has presented.

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The Communal Space Between: Reconciliation in Emerson's "Experience"

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In the famous opening pages of "Experience", Ralph Waldo Emerson mourns that Nature never gave mankind the ability to make direct contact with objects; "Direct strokes she never gave us power to make; all our blows glance, all our hits are accidents" (288). The world that Emerson confronts the reader with in these opening passages is one of disillusionment and disorientation where perception is concealed in a fog. There are no absolute assertions made that can comfortably position one within the world presented. Instead, the reader is placed squarely in the midst of, "a series of which we do not know the extremes, and *believe* that it has none", and on an eternal staircase, "which we *seem* to have ascended," but cannot recollect the means of having done so (my emphasis; 285). The emphasis here is immediately placed on the futility of perception, in which it is only possible to apprehend the current state of things without being able to recall the processes that led to the moment. Emerson laments that one can believe, based on fragmented surface appearances, but it is never possible to know—to apprehend the true meaning of the moment as it happens.

Instead, Emerson perceives a world that is relentlessly pervaded with disjunction, and he expresses a frustration, rooted in the pain of his son's death, that between any experience and the apprehension of that experience there is an inherent loss. Comprehension requires reflection, and in that fleeting pause for understanding, Emerson notes that all that is left, all that can be left, is the recollection of an experience—never contact with Experience or Truth itself. When he first mentions the death of Waldo, it is with an eerily disconnected sense that, "I seem to have lost a beautiful estate, — no more. I cannot get it nearer to me" (288). The dispassionate tone of the language, comparing a child's death to a piece of real estate, shocks the reader and highlights the stark desperation of the paradox that Emerson finds himself in, in which the only permanence in life seems to be the inevitability of experiencing loss. In this sense then, Emerson is mourning not only the loss of his son, but also the loss of the experience of *loss itself*. He grieves "that grief can teach me nothing" (288), because even grief, with all of its profound emotional gravity, is nevertheless subject to being lost in the bombardment of consecutive experiences.

This lamentation and explication of paradox of the loss of loss gives birth to a new desire in the essay's unfolding. Emerson resolves to operate within the disjunction, the space between the soul and its object, and comes to re-envision this space between as a place where apparent oppositions— between the past and the present, or presence and absence— can be reconciled. Such readjustment of perception allows for the fusion of these discrepancies as loss comes to be understood as a new presence capable of spanning the disjunction and facilitating a new and eternal contact with the son that he has lost. The work of the essay lies in merging the individual isolating experience into a universal understanding of all experience being necessarily defined by loss. The circular form of the essay reflects Emerson's new understanding of loss as the text becomes a literal manifestation of his proposed solution to the problem. The solution, of course, lies in an Emersonian embrace of paradox.

Most critics agree that "Experience" is, in one way or another, about loss; about the discrepancy between reality and our perceptions of reality. However, the precise nature of Emerson's meditation on loss remains an area of dispute in much critical discourse on the subject

of “Experience”. Emerson’s reference to the death of his son in the essay’s introduction is acknowledged as integral part of the work in scholarly readings. However, critics seem divided as to whether the mention of Waldo’s death functions as an implicit yet driving force of the essay, or whether it is given as just one example, albeit a very powerful one, of the strict limitations imposed upon the human capacity to comprehend the full import of any experience.

Those critics who view Waldo’s death as the axis of “Experience” argue that the entire work is an exercise in grief, Emerson’s way of getting the experience nearer to him. O’Keefe argues that Waldo’s death acts as “the displaced center of the essay” (128). As such, the work is Emerson’s attempt at establishing an inviolable connection with his son in an entirely new way, outside the boundaries of conventional thought about death. O’Keefe’s argument centers on Emerson’s revelation that the self can never experience the “death-of-the-Other” as he terms it, because it is a wholly singular and private event for the Other. According to O’Keefe, “the real existential horror of Emerson’s awareness is that *I go on*” (124). Similarly, Cameron’s characterization of “Experience” as elegy insists upon the fact that Waldo’s death is interwoven throughout the essay although it is explicitly mentioned only once. She places a great deal of emphasis on the paradox inherent in the work by noting that Emerson insists Waldo’s death does not touch him, yet the successive topics he discusses within the essay are all undoubtedly colored by this devastating event. The bulk of the essay acts as a “reiteration of Waldo’s death” (29). The pattern of the work, in which Emerson seems to invite and then retract several kinds of explanations for the proper apprehension of experience, reflects his struggle to find a steadfast hold on the particular experience of his son’s death. Cameron asserts that the essay’s primary function is to locate and define a new sphere of connection, and to derive power from the gap between experience and apprehension, and thus establish a connection with Waldo within this loss seeing as this “space” between them is now the one commonality between the Self and the Other.

The arguments of other critics deviate from Cameron and O’Keefe in that they view the purpose of the passages on Waldo’s death as a springboard of sorts for Emerson’s later ruminations on the nature of all human experience. Schirmeister argues that Emerson’s struggle to redefine our notions of relation and connection with one another is indicative of a need to redefine the nature of community. In her estimation, Waldo’s death has relevance to the essay only as it can be applied as a generality to loss in general. A true sense of community must be founded not on familial relations, mutual understanding, or a full and immediate grasp of experience, but in the absence of these things. Ellison hypothesizes that “Experience” reflects from Emerson’s need to differentiate between the domestic sentimentality and private devastation of Waldo’s death and the philosophical connotations that a disengaged view of the event presented. She suggests the work is, “largely constituted by this unsteady resistance to the occasion” (158). Instead, it delves into the masculine, analytical sphere of a generalized commentary on human relation to experience. Arguing an even further departure from the centrality of Waldo’s death to the whole, Norwood roots his interpretation in a discussion of “the lords of life” that, in his argument, constitute the essay’s structuring principle. He reads the work as Emerson seeking an audience with a reality that would help to give loss, any and every loss, a higher purpose (24). As such, Norwood reads “Experience” as a logical progression towards an ultimate detachment from the self in order to fuse with the universal flow of Being (36).

While all of these interpretations have textual relevancy, I find difficulty accepting any of them as the fundamental basis for a reading of the essay. All are primarily concerned with the same elements of the work, and they are persuasive as far as they go, yet they must go further.

The contrasting entities of singularity and generality, private and public, individual and universal that are the source of the argument between these two critical camps seem to me to ignore a general tenet of Emersonian thinking. Namely, that there can be no distinction made between any of these so-called opposing elements. Viewed within this context, the critical dispute regarding the place of grief in “Experience” should not be regarded as disagreement at all. One interpretation is not complete without the other, the currents flow in both directions. Cameron’s elegiac characterization of “Experience” presents a view of the work in which private grief has a universal applicability, while Schirmeister’s interpretation reflects a search for communal sentiment that arises from within the confines of a singular experience. The reconciliation between these two seemingly disparate ideas is present in the communal space between: a place of loss that is both everything and nothing, always and never, past, present, and future. This space that I speak springs from Emerson’s assertion that, “The middle region of our being is the temperate zone,” because it is in this space between that an expansion of thought becomes possible. Emerson posits that, “Between these extremes is the equator of life, of thought, of spirit, of poetry...” (296). All of the critics discussed seem to be conscious of the presence of this idea in the theme of “Experience”, yet they do not carry the thought over into an understanding of the essay that allows it to be both emotional and analytical. Therefore, their disparate views on the essay are impossible to categorize as right and wrong. They are merely separate means to the same end, parts of the whole that have yet to be integrated.

A recurring idea in Emerson’s work is a particular conception of integration—a blurring of the distinctions between an individual entity and a unified whole. In his other essays, “Self-Reliance” for example, he posits that a true individual, by nature of that individuality, is assimilated into a sort of universal consciousness. This notion, when applied to “Experience,” leads to the perception that a private and wholly unique experience is perhaps the only way of achieving unification with a broad truth. However, I go even further in arguing that singular experience is not the *means* of arriving at a universal maxim, but that, for Emerson, individual experience simply *is* the only universal. The essay is not solely about Emerson’s personal experience with grief, nor is it only a philosophical examination of experience in general. It is both. The heart of “Experience” is in the paradox. By recognizing that our knowledge of the universal is limited by individual perception, we see that that it is this limitation imposed upon our perception that acts as the universal hallmark of all experience.

Through the essay, Emerson attempts to overcome the distances between apparent opposites, by perceiving the space between them—their differences—in a new way. The core of the essay lies in the idea of unity by way of diversity. This new understanding of the paradox is what enables Emerson to come to “accept the clangor and jangle of contrary tendencies” (296), because he can reconcile the seeming oppositions being merely two sides of same object, parts of a more expansive whole. In this way, the vital importance of the circle in Emerson’s other work becomes an important structural element for “Experience” as well. In his earlier essay “Circles,” Emerson suggests that the great satisfaction of thinking lies in what he deems to be the expansive, circular shape of thought itself; and the assertion that this circularity of thought ultimately proceeds towards generalization. Generalization is a key term in any reading of “Experience,” because it is, in Emerson’s account, “always a new influx of the divinity into the mind. Hence the thrill that attends it” (230). In its struggle to re-envision individual experience as a unifying force, to achieve generalization, “Experience” is an essay that has no center, but runs in a circular pattern.

In a way, the end of “Experience” delivers us right back to the beginning. In the opening

sentence of the essay's final paragraph Emerson states, "I know that the world I converse with in the city and in the farms is not the world I *think*. I observe that difference and shall observe it" (310). Here, Emerson is continuing to recognize disjunctions—the gap between his thoughts and the external world. However, this continued observation of difference is now perceived in a manner that characterizes difference as a conduit meant to foster expansion, or generalization, of thought. In the sentence immediately following the passage quoted above, an undeniably more hopeful Emerson than the one in the essay's beginning asserts that, "one day I shall know the value and law of this discrepancy" (310). His articulation of the desire to know, to continue a study of these discrepancies marks a cleanly executed return to the essay's original question, "Where do we find ourselves?" (285). At this point however, the work implicitly suggests that the answer to the question can only be, "no longer here." In true Emersonian fashion, the circle of the text has been completed. Emerson has taken his ideas as far as they can go in this particular space. Paradox becomes the ultimate solution offered as the only available option for further expansion of the ideas presented here must lie in a willingness to overstep the boundaries of this "textual sphere" in a push towards a new connection and original thought. Emerson foresees a moment of generalization that encompasses all of the work done in the textual space of the essay and also moves beyond its confines—an as yet undetermined time when it will finally be possible to *know*.

The circularity of "Experience" and the fact that it is meant to finally drive the reader onward and outward from itself is the marker of Emerson's belief in the unifying power that exists in the transient nature of experience. Individual experience is the only universal maxim because all experiences are marked by the fact that they must eventually end. The absence that the loss of experience occasions, the inevitability of the occurrence of loss, is *the* essential component for advancement towards ultimate generalization and a merge into universal Being. In such a way, Emerson is at last able to draw the experience of Waldo's death nearer to him because the loss, and even the subsequent loss of the loss, are now understood as leading him closer to and not further from the full contact he desires. "Experience" recognizes that our knowledge is always limited: we can only know what the world is not, and we can only gather fragments of the entire picture. However, in accepting and redefining these limitations, the essay finds a way to move beyond them. "Experience" finally insists that it is possible, and indeed necessary, that we find confidence enough to operate within the expansive confines of a space that is both nowhere and everywhere, because the only place that we can truly find ourselves is at the site of loss. It is impossible to return to the experience itself, but Emerson suggests at the essay's end with the resolute encouragement, "Never mind the defeat. Up again—old heart!" (311), that there is power to be derived from a view of loss that emphasizes its ability to drive the mind perpetually outward to concentric circles of new thought— which is finally, in the work's estimation, the only lasting means of contact.

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The Nibelungenlied: A Tale of Two Women

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Generally, the German literary representation of women from the Middle Ages through the Eighteenth Century tends to portray only two types of female characters: the obedient and shy type, subservient and self-sacrificing, always requiring protection, becomes the prototype of the woman “to be placed on a pedestal;” while the other type is considered deviant, contrary to society’s norms, and perhaps deserving of punishment or even of an unnecessarily cruel and painful death. Thus, a non-compliant woman might be labeled a “witch” and publicly ostracized, if not outright burned at the stake. Unfortunately, one rarely reads about intelligent and powerful women, on any social level. In strong contrast, the medieval heroic epic, *The Nibelungenlied*, portrays two completely unconventional female roles: heroines who are not only beautiful, but uncommonly intelligent, strong, and enormously powerful as well. In this paper I would like to address this portrayal of women in *The Nibelungenlied*, with respect to medieval social norms and the political challenges these two women represent to them.

On the surface, Kriemhild, the sister of the Burgundian King Gunther and husband of the powerful knight Siegfried, and Bruenhild, a Celtic queen and later wife of Gunther, seem to fit somewhat into cultural norms of the time. Both initially occupy a typical position within the courtly hierarchy, since their status is defined through marriage. Each is wooed and won by appropriately strong and masculine kings, and each apparently subscribes to life as it is within the framework of the courtly ideal system.

However, the kings also show some weaknesses, leaving an opening for the queens to utilize them and to bolster their own positions. The men’s flaws are in the intellectual and moral domain: though Siegfried is blessed with uncommonly large bravery and muscles, he proves lacking in the areas of intelligence and cleverness; and Gunther reveals that he is not above the use of deception to win Bruenhild, the woman of his dreams, which initiates the chain of events leading to Siegfried’s murder.

The role Kriemhild plays in *The Nibelungenlied* bears great significance to the plot, perhaps even greater than that of the male characters. For example, the most important narrative relevance served by Siegfried’s murder, the central event in the first part of the epic, is Kriemhild’s pain and suffering, which eventually give rise to the merciless and bitter revenge she wreaks upon the murderer of her lover and the entire Burgundian society. In fact, among literary critics writing throughout the past century, there have been several who have attempted to represent the epic as solely Kriemhild’s story: Winder McConnell has stated that “*The Nibelungenlied* is, in essence, the story of Kriemhild. She is with us from beginning to end, the first figure introduced by name in the epic, and the last to perish in the slaughter of Burgundians and Huns at its conclusion...we are dealing here with someone whose potential for destruction is early documented“ (McConnell, 10).

In medieval literature, power can sometimes be shown by a character’s ability to act independently within the courtly social system. Kriemhild demonstrates again and again her independence, and well knows how to make use of social rules and customs to take care of herself. Her autonomy and independence appear particularly in her acceptance of King Etzel’s – the literary name for the historical Attila the Hun – marriage proposal. This action in her own interests, as a part of her plan for revenge, prove the considerable amount of inner strength

present here: she can bear whatever she must, outwardly shut off the deep pain she feels while mourning for her dead husband, Siegfried, and even actively use the social system to her advantage, entirely contrary to the essentially passive role women play in the majority of medieval literary works.

Signs of Kriemhild's ability to manipulate social norms for her own ends are also evident in the first part of the Nibelungenlied, where her character exudes an unmistakable preoccupation with both power and domination. When Bruenhild threatens Kriemhild's position, for example, Kriemhild concentrates solely on cutting down her brother Gunther's reputation, and exalting her own husband, Siegfried, above Gunther, since she knows that the status of their husbands represent their own status (as their wives). While the conflict between the two queens appears to concern the men, both women are actually vying for superiority by disputing each other's claim to the number one spot. She actually goes as far as to claim the title of being greater than any past queen to have worn a crown! It is of great importance to Kriemhild that Siegfried's reputation remains at a higher level than Gunther's, for this is how, at court, such matters are decided. Her active role in assuring this reveals her worthiness for battle within the courtly world.

Not only does the refocusing of the plot shift emphasis onto the queen, but it also restructures the relationship between the genders with regard to power. At some points of the epic poem it seems to the reader as if, on the deepest and most meaningful levels, the relationship between the gender roles is described in a reverse manner to other literary and social norms of this time, in that it is not the man who is dominant, but the woman. Particularly in the second part of the story, in which Kriemhild becomes the source of terrible chaos and fear, she employs all her skills and manipulations to exert her will over men to unbounded extremes. She reveals herself to be driven primarily by lust for vengeance as she overthrows social norms and clearly has no concern whatsoever for traditional, "feminine" roles or for any courtliness at all. Her later relationship with King Etzel is merely a facade, a part of a scheme to further her own plans for merciless revenge. The marriage to one of the most feared and powerful leaders of this period provides her with another, brand-new basis of power. From the moment she becomes his wife, she begins to relentlessly plot, scheme, and plan the demise of all who have done wrong to Siegfried and to her. Even the birth of her son, Ortlieb, serves a distinctly pragmatic function, as it further binds King Etzel and his army of Huns to her even more closely than before. At this point, she has achieved and amassed such power, that upon her command, the entire army of Huns would fight, kill, and die for her.

The extremeness with which Kriemhild pursues her goals compels one to ponder why she has become such an angry, power-driven, revenge seeker, as she is described at the end of this epic. Perhaps the injustices, to which her brothers, Bruenhild, and the rest of the Burgundians have subjected her, make Kriemhild's thirst for blood plausible. For instance, Hagen, her husband's murderer, not only strips Kriemhild of the love of her life, but he takes the treasure of the Nibelungen as well (to which she bore a rightful claim as the widow of Siegfried, who had won it through his prowess in battle). Even her brothers, though publicly claiming to punish Hagen, pay only lip service to their support of her in the case against her husband's treacherous murderer. At this incredibly crucial turning point in her personal and courtly existence, her family and friends abandon her, and she is practically left all alone with this grief and anger, longing for justice to be served.

Previously, I discussed the second influential female character, Bruenhild, in relation to Kriemhild. It is important to consider the significance of her role as well, although she appears

only sporadically in the story during the second half. She is renowned as the strongest, most powerful woman in the world, described in such a way, that no other woman, or even man, could so much as approximate the level to which she had claim without supernatural aid. Indeed, before her marriage to Gunther, she ruled as a sovereign with absolute influence and power. She was determined to prove her independence from and her authority over men. When a potential suitor came to propose marriage to the queen, the wooing process generally acquired the characteristics of a contest of brute strength, a wrestling match between the queen and the man asking for her hand in marriage. The constant refusals on her part to accept various marriage proposals, is “blatantly provocative in nature, for potential suitors pay with their lives for their folly” (McConnell, 43). Her seemingly inhumane custom of killing the unfortunates who invariably lose the wrestling contest, strikes one as more typical of the mythic realm than of the courtly world.

The defeat by Gunther, then, despite the unfair aid lent to him by Siegfried in disguise, not only comes as a great disappointment, but completely infuriates her as well. After all, Bruenhild had never anticipated that she would ever lose at wrestling and be forced to render obedience to a man or to be relinquished to an inferior rank! Gunther sees the situation entirely differently. To him, rather, she is a great “prize,” unlike any other queen, and on a much higher level than any other life partner could be. She thereby represents royal status and power in his vision of her. His desire for her is so great that he would even unfairly enlist the aid of another in competition for her hand, since she had already proven to him that he was not nearly strong enough to defeat her in an honest match. This situation provides yet another example of the power shift occurring within this epic from the masculine to the feminine.

Of course, in one sense, she does defeat him, as she physically denies him her body on their wedding night. Bruenhild uses her brute dominance in strength over the king to retain her virginity. With fair warning, and in response to his continuous attempts to come close to her, she literally hogties her new husband, Gunther, to a nail on the wall, leaving him there to cry and beg for mercy all through the night. The shaming of King Gunther, then, has important repercussions, since Siegfried informs his wife Kriemhild about the event and his own part in it. Bruenhild becomes justifiably outraged when she finally does find out who took her virginity as a result of the argument, or rather, battle of status and power between the two queens. In response, she plots with Gunther to kill Siegfried, the one who has caused her this embarrassment; therefore, she plays out her powerful role in the central event in the epic’s first half. Because Kriemhild’s entire lust after revenge is based on the betrayal and murder of Siegfried, Bruenhild becomes the catalyst in the sequence of events that frames the rest of the Nibelungenlied. The single quality that fascinates us the most about Bruenhild is her position of strength: she has managed to represent herself as a fearsome and dangerous contrast to a world otherwise dominated exclusively by men.

Although the two female epic characters I have discussed possess a diabolical side, they nevertheless remain truly tragic heroines in their own right. In a world controlled by men, Kriemhild reacts to restrictions against women far differently from comparable characters of this time. Her single will to successfully execute her revenge saturates the final part of the tale. Bruenhild’s motive was not love, but rather the gaining and maintaining of her powerful status; namely, never to be dominated by any man. Siegfried and Gunther’s lies and betrayal trigger her rage and the behavior that ends in catastrophe. Kriemhild’s sorrow and pain over the loss of her love becomes hatred, and her anger takes no consideration of human lives and the innocent. She does not differentiate between friend and foe, and spares no one. Her life, as well as the lives of

many others, has lost all value, except that she wield her vengeance.

While in this paper I have outlined some of the similarities shared by Kriemhild and Bruenhild, nevertheless it is clear that the heroines of the medieval courtly epics demonstrate much individuality as well: “Far from exhibiting monotonous sameness, they are cast by their authors in highly individualized moulds. Their personalities are distinctively outlined; their profiles projected with considerable precision” (Wynn, 127). The contrast between the two heroines of the *Nibelungenlied* can conclusively be described as follows: Bruenhild’s character mirrors aspects of the fairy tale, as by word of the legend, she possesses the strength of ten men. As Siegfried steals the symbol of her power – when the world no longer believes in her insuperability, she simultaneously loses this power in actuality. She nevertheless remains strong, all the while her power being based on prestige. From a psychological standpoint, Kriemhild’s behavior seems more believable. She is anger personified, and her power rises out of the extremely emotional reaction to her husband’s murder. Her behavior is single-mindedly controlled by feelings of revenge. *The Nibelungenlied* is a tale of two women who define their own destiny, and decisively impact the people and conditions around them at their will.

Network On Chip: Concept, Architecture and Design

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Project Summary:

Due to the increasing complexity of integrated circuits (ICs), the System-on-chip (SoC) architecture—the integration of on-chip resources on a single chip—is increasingly being used in a wide range of applications. During the next decade, the capacity of multi-billion gates will allow the integration of thousands of resources such as processors, interface circuits, FPGA blocks, and memory blocks on a single IC. The crux of the problem is how to efficiently connect all these resources to execute under a single system. It is not going to be feasible with traditional interconnection methods of shared buses or dedicated wires. This leads to the necessity of a special architecture fit for organizing and connecting all the resources, and a revolutionary on-chip communication infrastructure called a Network on Chip (NoC) is emerging as the most viable standard for dealing with complexities of on-chip interconnections. An NoC is a packet switched network that separates communication from computation and facilitates communication among the resources on the chip. With switches and resource network interfaces (interface between the switch and the resource), the NoC platform is to have the resources communicate among each other through data packets or messages. NoC topologies are defined by the interconnection structure of the switches and their routing algorithm among the resources.

This paper proposes a two-dimensional, 4x4 mesh switch topology which integrates a maximum of 16 resources on a chip (see figure 1). The entire project was built from scratch, beginning with the design and construction of the switch. The goal is to develop a switch with a small area that enables immediate practical use for reliable data transfer among resources. Each switch (see figure 2), depending on its location in the mesh, has between three to five bidirectional ports, connecting to neighboring switches and a local resource (i.e. the switches located in the corners have only three ports, whereas the switches in the middle have five). Internally within each switch, all ports follow a round-robin arbitration algorithm directed by the control unit. This means each port is designated a certain time slice to establish a connection with other ports to allow transfer of data. Processor cores are used as the resources, and a 16-bit CPU based on a RISC-MIPS (Reduced Instruction Set Computer-Million Instructions Per Second) architecture was built and connected to each switch. The switches and processors were coded in VHDL, and their integration into a NoC was performed in schematic editor with the Xilinx 3.1 simulation software. The completed NoC delivers a 3x3 mesh network with nine switches and nine processors, and was validated through functional simulation. The network's performance was analyzed in comparison to a traditional system, which utilizes only one processor.

Introduction and statement of the design problem:

Continuing advancements in communication systems and transistor technology is making traditional methods of building ICs more difficult to cope with speed, power consumption, and physical size. Increasing transistor density, higher operating frequencies, and reduced product life cycles are traits that accompany these advancements. In the industry today, higher levels of integration is demanded to keep up with the customer's demands and the competition, but this trend towards integration is followed by problems of complexity, economic risk, verification problems, and clock distribution. To address these new problems, computer chip designers are developing ICs that integrate heterogeneous functional elements into a single chip. This development is the central concept in what is known as a System on Chip (SoC). In a SoC, numerous IP cores are interconnected to form a single system.

With the constraints of traditional SoC interconnection methods, the communication requirements among these IP cores cannot be supported. The only feasible way to provide support for ICs with billions of transistors and clock frequencies of more than 10GHz appears to be a Network on Chip (NoC) interconnection architecture. An NoC is an on-chip network composed by IP cores connected to switches which in turn are connected among themselves to form communication channels. NoCs are increasingly gaining attention as the solution to interconnection architecture constraints, namely energy efficiency, reliability, scalability of bandwidth, reusability, and distributed routing decisions. The following sections of this report focus on the architecture and design of the proposed switch, topology used to connect the switches into a 2-D mesh, justification of the design choices, discussion of the test results, and improvements that could be made in the future.

Justification:

The ultimate goal of designing the NoC is to maximize on-chip performance for future ICs. The specific problem is how to efficiently balance the trade-offs that exist between such design choices as simplicity, speed, energy consumption, area, and reliability. When constructing the switch and interconnection architecture, priorities must be placed on certain performance criteria. For instance, emphasizing reliability and energy efficiency sacrifices chip speed, while prioritizing speed unavoidably leads to cryptic complexities with data transmission and energy concerns. Trade-offs exist for every design choice that is made, and comprehending these compromises is imperative to meet specific design requirements. The work and activities mainly involved with the NoC are to achieve the optimal on-chip performance while minimizing trade-offs. Possible short term impacts from the successful implementation of the NoC infrastructure may include the simple realization by the science and engineering communities that such technology exists. The powerful long term impact is that in the next five to ten years, the NoC will become the standard for supporting multi-billion transistor ICs, and the resulting computer chips with speeds of more than 10GHz will revolutionize every facet of society.

Comparison to other relevant design problems:

Various approaches to design the NoC were studied to compare their complexity, adaptability, energy, power, scalability, and size. This first part will provide a brief description on the centers of research and their developed solution. The second part will deal more with the design choices and their respective trade-offs.

One of the first to propose an NOC was the 'Universite Pierre et Marie Curie'; the performance results were good for an early stage design. The improvements needed were:

latency (could get really slow), memory (too many buffers) and a wiring system (too complex)[1]. Stanford developed their version; the main characteristics were the send-and-forget packets and the routing can be pre-scheduled or dynamic[1]. In Finland, Tampere Institute of Technology used switches and wrappers between the network and IP. Finally the Philips Research Laboratory created a hybrid network that comprises packet switching and time division circuit switching[1].

The design options were wide, and making decisions was base most of the time on the trade-offs involved. The major concerns with the switch architecture are the size and arbitration algorithm. The size is defined by buffers which act as storage elements for data packets entering and leaving the switch, and the buffers must be large enough to guarantee correct functionality of the communication. The switch can be comprised of relatively unsophisticated components, such as a plain buffer, as opposed to more complicated components as a circular FIFO. It can also utilize either serial or parallel communication arbitration algorithms to move data within the switch, from one port to the other. Routers and parallel data communication yield higher chip speeds, but only at the expense of more complexity and energy consumption.

Different NoCs use different topologies for interconnecting the resources via switches. Shared busses will have too many constraints to support future ICs, and hence it is not suitable for an NoC interconnection architecture. The most reasonable alternative is a switch-based architecture. The tree, mesh, and cube topologies [3] are some of the basic switch structures (see figure 3), and the pros and cons of each design were examined to select a suitable design structure for this project. The most common tree structures are the binary-tree and the fat-tree topologies. The binary-tree topology has a simple structure of each node connecting to a node located above and below it. Although its simplicity is good, the root acts as a bottleneck because all the traffic crossing that boundary can only go through a single node. The fat-tree, in contrast, evades this problem by creating multiple trees, which leads to increased bandwidth and lower latency. The trade-offs for this layout are the increased complexity of the wiring, and the fan-in and fan-out problem associated with the ports. Each switch is connected upwards to two switches and downward to two switches in the butterfly topology is a further improvement within this tree structure, but it comes with further complexity and area consumption.

Array networks are another division of topologies whose properties depend on dimension, size, and degree of the nodes. The widely known ring topology or the linear array is in one dimension. This network will only be effective when the transmission distances are short. In two dimensions, the 2-D mesh and the 2D Torus topologies are the most famous. With these structures, the increased bisectional bandwidth and the availability of multiple links leading in the same direction (having numerous paths to reach the destination) become notable advantages over the linear array models. The cube topology is in 3-D, and the added dimension generates increased bisectional bandwidth. The complexity with dealing with 3-D directions during transmissions becomes a major problem with this topology.

Design project objectives:

CPU performance criteria were the main considerations for the design, and the short-term goal of this NoC project is to develop a functioning network of switches for on-chip communication between nine processors. This can then be used as a pedestal for prospective research into the long-term goal: addressing real-world performance issues with real applications. Implementing Soc architectures with hundreds of functional units to solve real-life problems is a challenging and open research area. The NoC concept is still in its infancy, and

there are no conclusive or justifiable answers to many design issues. This project and subsequent improvements and research will help clarify this.

Proposed method and technology:

The methodology used in this design conforms to the methodology used in industry for the research and development phase. Indeed, this project started by an extensive research of the current state of development of the NoC. The research was followed by a detailed survey of the different technologies and methodologies. The second phase was to start developing a NoC that conformed to the initial requirements and specifications: simple concept, low energy consumption and high performance. The development of the architecture was followed by the design phase which led to the implementation phase and finally to the verification and validation phase. Following the life cycle model, the implementation phase was the shortest.

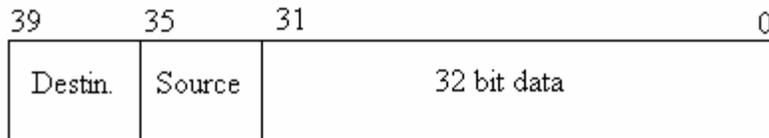
Due to the strong correlation among the design concepts and the tight structure of the integrated project, all the tasks were completed through more or less of a cooperative effort. Nevertheless, each team member was assigned specific modules and was responsible for the coding, implementation and verification of those components. Yuichi Watanabe was responsible for the comparator, input buffer and four corner-switches. Rhita Boufelliga was responsible for the output buffer, control unit, processor/switch interface, memory module and top level.

The technique or methodology used for the implementation of the system was a combination of VHDL (hardware description language) and schematic capture using Xilinx 3.1 software. All the individual modules were created using behavioral modeling. The top level was created in schematic capture for a maximized optimization.

The final system is targeted for an FPGA implementation. In parallel with this project, the same system is being implemented on Tenor's schematic capture for a VLSI layout. The technology used in this case is the 0.5um tech.

The testing phase is one of the most important phases of this system. Indeed the testing must be done at different levels using different methods. A brief description of the performed tests and only the result of the acceptance testing will be provided. **Component testing** focused on the programming logic within the unit, while ignoring the interaction with other components. Each element in the design such as buffers, control units, comparator handshaking module were tested using the white box testing -all the possible inputs will be tested and their outputs will be compared against the expected outputs. **Integration testing** examined the interactions between the various hardware components. Tests followed the bottom-up approach, which tests and integrates the lowest-level units first. **Regression testing** was performed whenever a component of the system was modified; the testing consists of rerunning existing tests against the modified code to determine whether the changes break existing functions. **System testing** examined performance, throughput, resource loss, and transaction synchronization. This testing was performed, however more tests in this area would be useful if this project were to involve in the future. Finally, **acceptance testing** tests usability of the system. In this case, black box testing was used. More particularly the design was tested by interconnecting nine switches to nine processors. Please refer to figure 4 for the simulation results.

The data produced by the processors is 16bit. However, the switches communicate with packets. Typically the packet is 40 bits following the format illustrated below. Alongside each packet there are two synchronization signals that are used for handshaking purposes.



The results show that such a system is feasible and definitely improves the performance of the processor. It is reliable because it is a simple design –relatively to the superscalar or VLIW (Itanium processor), which means that there is less chance for error. It is also energy efficient since the nine processors are located within the same chip and therefore power dissipation is minimized.

The environment is always a concern, as the demand for more performing technology grows, the availability of resources and energy decreases. This design addresses this issue conceptually by improving performance while lowering energy. If every technology saved a little energy the results would factor in to be significant.

Results and discussion:

This NoC project makes use of a 2-D mesh topology with switches in every mesh crossing. This topology was selected over other topologies primarily for its simplicity in use and implementation. Furthermore, the 2-D mesh has low wiring cost and high bandwidth. Each switch and its associated IP core can be thought of as a single tile. All switches are equivalent and any number of tiles may be connected up to a practical point where the complexity from the large number becomes an obstacle to achieve a high performance. The wiring is also much less complex than for any tree topology while assuring better connectivity. This project in particular is designed to support up to a 4x4 mesh, or 16 tiles, as seen below.

The 2-D mesh also enables the routing algorithm to be simple. Routing algorithms come in two classes: adaptive (dynamic) and deterministic. The former uses different routing paths for each transmission between two ports, while the latter always uses the same route. The switch designed for this project implements the deterministic algorithm to avoid unnecessary complexities. The dynamic method, despite the better performance under heavy load with better fault tolerance, have complications involved with the routing, and it is more difficult to preclude deadlocks. In order to avoid deadlocks, the five ports (one port includes one output and one input buffer) of the proposed switch execute in round-robin, with each port being allocated a certain time slice.

The mesh topology also makes the addressing scheme of the network simple. Addressing becomes the basis for calculating the destination and path of the data. The switches are identified by their coordinates using an X-Y coordinate system, with the top left switch representing (0,0), top right (0,1), bottom left (4,0), and bottom right (4,4).

Conclusion and future work:

The implementation of the NoC was successful, and the main objective to develop an on-chip interconnection architecture that correctly transfers data between on-chip resources was fulfilled. The proposed NoC design employs a two-dimensional 3x3 mesh with deterministic routing switches. Reusability is a noteworthy feature of this design, and by using the same switches the mesh can be expanded to support future communication demands of complex integrated ICs. The main design issues of the switch include the size of the buffer and the choice of the arbitration logic and routing algorithm. The buffer size is 40 bits for all ports, and the switch operates a deterministic round-robin arbitration algorithm. Each collection of resources,

or an IP core, is connected to one switch that in turn is connected to its neighboring switches. A direct two-dimensional layout of the mesh with switches and IP cores on a silicon surface provides a physical-architectural level design. This NoC architecture comprises the first three layers of the OSI reference model: physical layer, data link layer, and the network layer.

One significant achievement besides the successful implementation of the NoC is that the all phases of the project's development were completed without any monetary costs. The vast majority of engineers today encounter difficult monetary issues that impede the progress and quality of their work; this NoC project is a good reminder for developers, designers, and engineers that expending thousands of dollars towards a project and exceeding the available budget is not always necessary to realize design objectives. Balancing the cost with the ideally achievable goal is critical. In the real world of engineering, trade-offs must always be considered between time and budget constraints, and learning how to manage time and money wisely is an important requirement for all prospective engineers.

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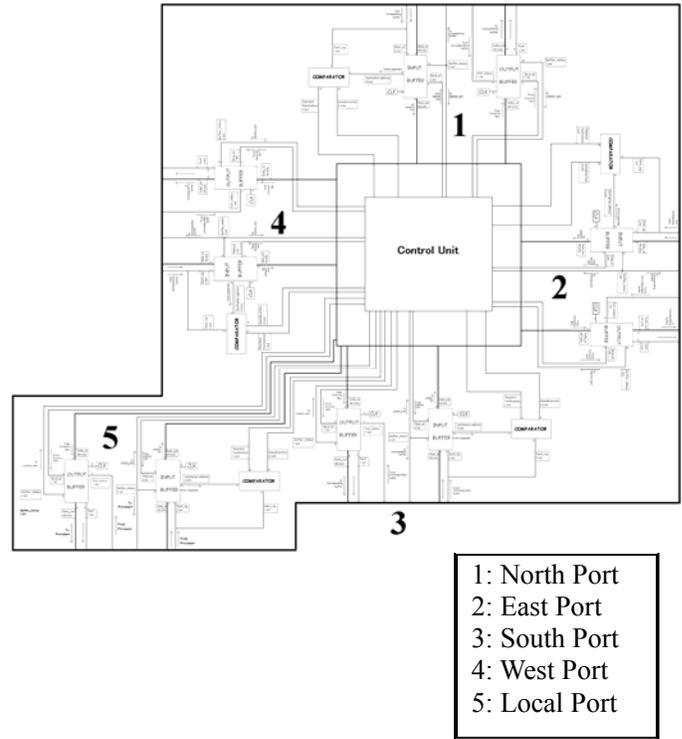
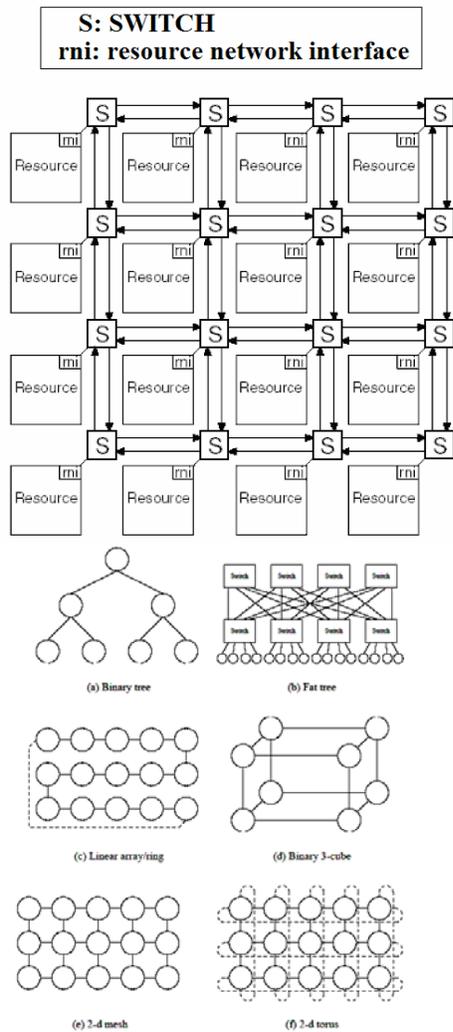
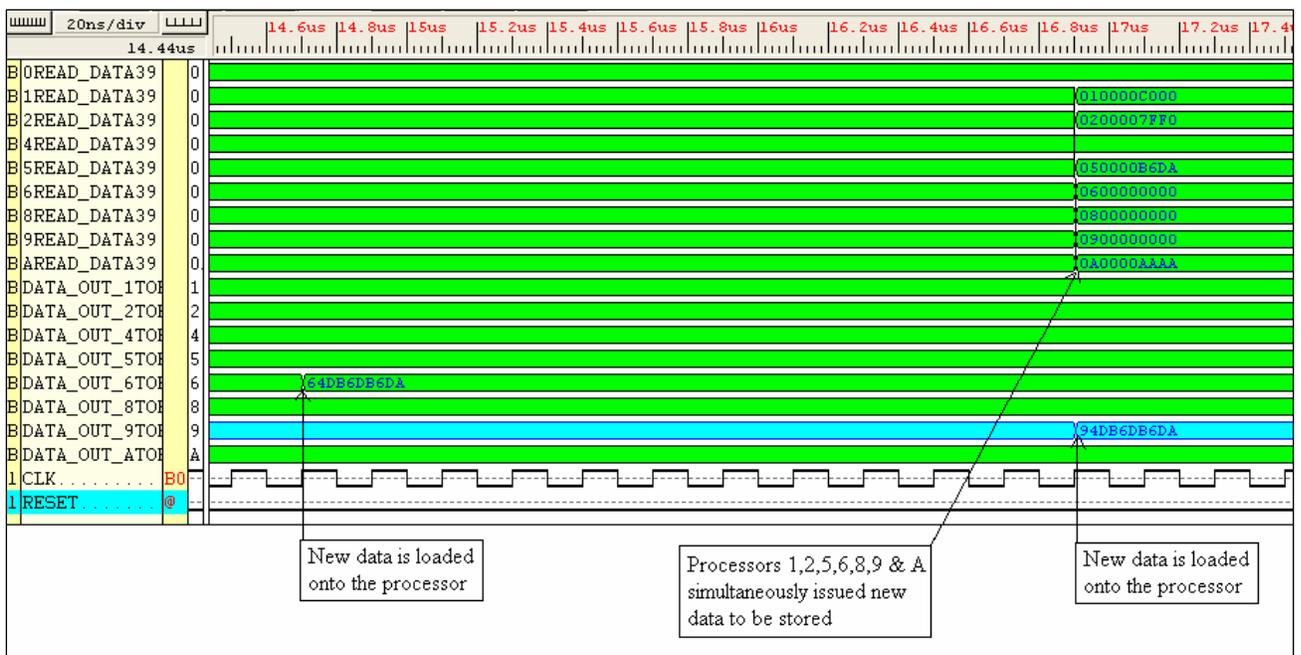


Figure 1. (Top left) 4x4 NOC configuration [2]

Figure 2. (Top right) Five-port Switch Architecture

Figure 3. (Left) Various Network Topologies [3]

Figure 4. (Below) Simulation Printout of a 3x3 NOC



German Romanticism, the Sociology of Knowledge and Identity Crisis in Wolf's Unter den Linden

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Christa Wolf uses in Unter den Linden the elements of German Romanticism to investigate her personal conflicts and to criticize the GDR and western society. The romantic elements that Wolf uses are the dream and the merging of past and present. Because of the ambiguity of the dream, one needs a broader perspective to interpret Unter den Linden. German romanticism and the sociology of knowledge stress that reality is a creation of the person. For Berger and Luckmann, reality is not only a creation of the individual, but also a social construction. The sociology of knowledge investigates the border between the individual and the society and, hence, gives a structure for the interpretation of personal conflicts and social criticism. Berger and Luckmann present their theory of the sociology of knowledge in The Social Construction of Reality. The important elements of their theory for the analysis of Unter den Linden are: institutions, socialization, internalization and formation of the consciousness.

According to Berger and Luckmann an institution is a customary and mutual pattern of behavior which all members of the society or the social group can share together. For example, marriage is an institution because it is a behavioral pattern which comprises marriage ceremonies, general life orders, children, rights and privileges; and the pattern can be shared among all members of the society. The members of the society also have a common meaning for the institution. According to Berger and Luckmann: "Institutions also, by the very fact of their existence, control human conduct by setting up predefined patterns of conduct, which channel it in one direction as against the many other directions that would theoretically be possible" (55).

Wolf uses a walk along the street Unter den Linden as a stage for her self-investigation and her criticism of the GDR. Wolf begins at the location of some of the main institutions in the German history and in particular the institutions of the GDR. Humboldt University, the state library and the state opera are located on the street Unter den Linden. Wolf acknowledges the importance of the street in the world events: "The fact that the street is famous has never disturbed me, not while awake and surely not in my dreams. I understand that it owes its bad luck to its position: the East-West axis" (" Daß die Straße berühmt ist, hat mich nie gestört, im Wachen nicht und erst recht nicht im Traum. Ich begreife, daß sie dieses Mißgeschick ihrer Lage verdankt: Ost-West-Achse"; 7). Wolf wrote the story in 1969 during the cold war. Berlin was a hotspot, and the Brandenburg Gate where the street Unter den Linden begins is located by the Berlin Wall. Moreover, the street terminates on Marx-Engels Platz.

Wolf starts her criticism of the GDR with the Great Changing of the Guard. Wolf describes the mechanical behavior of the soldiers, and how the individuality of one soldier threatens the order of the ceremony and by implication the order of the GDR institutions. A soldier does not follow regulations. He „ ... marched off right into a disaster ... “ (“...marschierte schnurstracks auf eine Katastrophe los...“; 10). The narrator further explains:

Five or ten minutes ago the one, absent-minded of his duty—possibly damaged by the heat—on a command only perceptible to him, suddenly executed an exact left face, goose-stepped with his properly shouldered rifle up to the corner of the building he was symbolically guarding and,

after renewing his left wheel, finally, stopped in the thick shade of a chestnut tree. With a calm conscience, he stood impeccably at attention in the wrong place... Not that it was any of my concern, but as the honor guard moved away, it appeared to be complete again. (Vor fünf oder zehn Minuten erst hatte der Pflichtvergessene, geschädigt womöglich von der Hitze, auf en nur im vernehmbares Kommando hin plötzlich eine exakte Linkswendung ausgeführt, war mit vorschriftsmäßig geschulterten Gewehr im Stehschritt bis zur Ecke des von ihm symbolisch bewachten Gebäudes marschiert und, nach erneutem Linksschwenk, endlich im dichten Schatten einer Kastanie stehenbleiben. Ruhigen Gewissen stand er in untadeliger Haltung am falschen Ort auf Posten . . . Nicht, daß es mich etwas anging, aber das abrückende Wachpeloton schien wieder vollzählig zu sein.; 10)

The last comment of the narrator shows that the violated regulations do not threaten society. Individuality does not threaten it either. According to Sara Lennox in "Christa Wolf and the Women Romantics", "In her works, Wolf has consistently pleaded for a conception of socialism which understands its goal as human self-realization... " (33). Wolf is against the deterministic and economic image of Marxism which overemphasizes technological progress and materialism. Because the institutions are linked to the GDR, the street and the institutions become a stage for the criticism of the GDR. The GDR oversees the institutions and is responsible for what happens in them. Hence, a criticism of the institutions implies a criticism of the GDR.

The narrator in Unter den Linden is also under the control of a repressive consciousness. However, Hans-Georg Werner in "Zum Traditionsbezug der Erzählungen in Christa Wolfs Unter den Linden" asserts that the higher power that the narrator obeys comes from her need for conflict resolution (40). The sense of a higher power, of something bigger is the consciousness of a generalized other. The generalized other is the result of the primary socialization. The society forms in a person through the family and significant others a consciousness which includes the internalized expectations, demands, values, meanings and norms of the society. However, secondary socialization changes the generalized other. According to Berger and Luckmann, "Secondary socialization is the internalization of institutional or institution-based subworlds" (138). If one joins an occupation or the communist party, one accepts the values and the norms of the occupation or party. Through socialization the individual learns the reality of the society. But, nevertheless, the individual creates his own version of reality.

The narrator accepts the values and the philosophy of Marxism of the GDR and the romantic literary tradition. But when these institutions collide with each other, the narrator develops three pairs of conflicts: the romantic literary tradition with the GDR, the romantic literary tradition with Marxism and Marxism with the GDR. Every conflict corresponds to a particular socialization: her socialization in the romantic literary tradition, her socialization in the GDR / SED and her socialization in Marxism.

The narrator tries to exchange her repressive consciousness of the totalitarianism for the consciousness of the romantic individuality. Peucker states, "Unter den Linden: ... records the beginnings of Christa Wolf literary involvement with Romantic women writers ... " (305). The narrator submerges herself in the fountain in front of the state library. According to Peucker the water is the feminine element (306). The narrator enters into the womb. It symbolizes the descent into the literary unconscious and into the literary past/tradition. The narrator can now be an

individual. Without individuality the person lacks weight. One does not exist. While she lies in the fountain, the water line separates her from other people. The people look on her judgmentally. But their judgments no longer affect the narrator. Now, she is free „ to go ... again among the people and to violate the taboos “ („ . . . wieder unter die Leute zu gehen und die Tabus zu verletzen“; 19).

After the fountain, the narrator enters the state library. According to Peucker the state library represents the literary tradition (306-307). The narrator finds, the rules of the state library are light and reasonable. She begins to form her literary consciousness. Otto and the Unnamed One represent two sides of her literary consciousness. Otto lives in the apartment that lies under the apartment of the narrator. He is a teenager with patience and wisdom. Hence, Otto represents something else. He represents a budding romantic consciousness because the narrator talks with Otto about abstractions, human happiness, individuality, complacency and the un-lived life, i.e. the longing for life. “Don’t you see, how they run away from it, farther and farther from themselves? And do you never ask yourself where everything goes that we can never do? The un-lived life “ (62). These subjects are romantic ideas. The talks develop the romantic consciousness.

The Unnamed One represents the longing for love or the guilt of the un-lived life. Max brings along the Unnamed One, so that the narrator can meet him. Max and the Unnamed One remind the narrator of the song about the pain of the love. The Unnamed One is also the judging part of the romantic consciousness. The narrator says that the Unnamed One follows her, but she tries to avoid him. Her avoidance of the Unnamed One shows that the narrator has a guilty conscience. The author uses the Unnamed One and the golden fish to criticize Marxism and materialism. The narrator meets the Unnamed One in the Expressobar, after she visited the shopping district of Unter den Linden. In the shopping district the narrator meets the golden fish. The author links the fish and the Unnamed One with the consumer society because the shopping district symbolizes materialism. The golden fish appears to symbolize Marxism. The fish represents simultaneously Wolf’s socialism and the deterministic economic image of the Marxism. The fish is a contradiction because it represents the early hopes of Wolf about socialism in the GDR and the extant realities of the GDR.

In the shopping district, the narrator shows her conflict with the materialism of the GDR and the German people. The consumers run away from the fish because the fish represents the early socialism of Wolf and they have guilty consciences. Yet, the fish runs away from the Unnamed One because the Unnamed One criticizes the fish and can easily kill it. The narrator may still have the remains of a Marxist consciousness. The Unnamed One announces the sentence "poppycock" on the fish, and the fish runs away. The narrator also has criticisms of the fish because the fish gives no consolation during the long, lonesome nights in the electric light bulb factory. The fish is austere, prosaic and cold-blooded. It symbolizes deterministic and economic Marxism and the cold strictness of idealism.

With the disappearance of the fish, the narrator solves much of her conflict with Marxism. However, the main conflict is between romanticism and the GDR because the conflict is also personal. This conflict is symbolized by the story of Peter, the narrator and the girl. The girl is the narrator when the narrator was young and naive. Apparently, the girl had a relationship with Peter. Peter betrays the narrator by the betrayal of his wife, the girl and his occupation. Peter can represent the early GDR when the girl and Peter were loyal to their Marxist ideals. Peter leaves his wife and marries the Blonde. The Blonde is superficial and shallow like Western society. Peter also betrays his principles by betraying his occupation. He changes his thesis

because his professors do not want to be embarrassed. Moreover, Peter betrays the girl. He leaves her to face the Conflict Commission alone, and consequently the girl must endure lonesome evenings working in an electric light bulb factory. She was exiled there.

The electric light bulb factory represents the loss of the narrator's significant others. She was without Peter and Marianne, she lies now beyond the university. The girl/the narrator is outside of her structure of the plausibility. According to Berger and Luckmann the structure of plausibility consists of the interrelations of meanings of the group or society and the justifications for these meanings (92). A person needs a structure of the plausibility to maintain the generalized other because the structure of the plausibility legitimizes the world view of the group or society. Without structure of the plausibility a person experiences an identity crisis and needs re-socialization. If people find new significant others and a new structure of the plausibility, they interpret the past anew using the new structure, "In addition to this reinterpretation *in toto* there must be particular reinterpretations of past events and persons with a past significance" (Berger and Luckmann 160). The electric light bulb factory and the betrayal explain why the narrator must interpret her past anew. Her higher power is the new consciousness of her romantic literary other.

The girl and the narrator must renounce the GDR ideology in order to find themselves and to develop in the narrator a new romantic consciousness. The conflict commission represents the internal conflicts of the narrator. But, Peter and the GDR never have a conflict about their betrayal of their principles. The narrator writes, ". . . punishment for the breach of faith catches only those who believe in loyalty. However, my friend Peter doesn't do loyalty" (14). The lack of the conflict in Peter is also a criticism of the GDR. The narrator does not believe that Peter suffers for his sins. She can only resolve her conflict with him if she understands him and sees that he will suffer and that she also suffers too much because of her sins. After a discussion with Otto about the un-lived life the narrator finds out that Peter understands what he did. The narrator writes:

Do you know what you are ceaselessly pursuing? Aiding and abetting. To murder? He mockingly asked, "To circumstances leading to death?" I saw that the thought was not new to him. "Thus, you condemn me," he said. I said, "You must not think that you make me defenseless because you turned yourself in—an hour too late, by the way. You have never walked the rope?" "Which rope?" "The rope over the abyss." "You have always waited for the bridge." "I have always tried to build the bridge." (Wissen Sie, was Sie pausenlos betreiben? Beihilfe. Zum Mord? fragte er spöttisch. Zu Zuständen, die zum Tode führen. Da sah ich, daß ihm der Gedanke nicht neu war. So verurteilen Sie mich, sagte er. Ich sagte: Du mußt nicht denken, daß du mich wehrlos machst, weil du dich stellst—eine Stunde zu spät übrigens. Du bist nie aufs Seil gegangen? Welches Seil? Das Seil über dem Abgrund. Du hast immer auf die Brücke gewartet. Ich habe immer versucht, die Brücke mit zu bauen; 65-66)

Peter disappears, and the narrator speaks with the Unnamed One. She recognizes that Peter fell from the rope into an abyss: "A long fall follows the snapping of the rope, not yet painfully, only that one pulls with oneself what would have given later, a hold: the certainty, above all, that one could not have acted differently. Terror follows, shame, finally, also . . . fear" ("Dem Reißen des Seils folgt ein langer Fall, noch nicht schmerzhaft, nur daß man mit sich zieht, was einem später Halt geben müßte: die Gewißheit vor allem, daß man nicht anders handeln

konnte. Entsetzen folgt, Scham, endlich auch, . . . Angst.”; 66-67). The Unnamed One asks if the narrator wants him to pile up one “pointless torture“ (“sinnlose Qual”; 67) upon another. His question is really: have you suffered enough, or should you put an end to your suffering? The Unnamed One demands a judgment, and the narrator acquits the Unnamed One. Because the Unnamed One can represent a guilty conscience, the narrator forgives herself for having an illicit relationship with Peter/GDR. She does not forgive Peter, but she ends the conflict with him by forgiving herself. The narrator suffered much. She must forgive herself to avoid more suffering.

After the conflict with Peter is resolved, the narrator still has to resolve the conflict between Marxism and the society of the GDR. The conflict appears with the golden fish in shopping district and ends with the young man in the Lindencorso. The consumers in the shopping district run away from the fish because they may have a guilty conscience because of their materialism. In a liquor store, the narrator drops an expensive bottle of liquor. The narrator writes, “The faces at the threshold of the shop all changed as if by a strong radiation – avarice, ruthlessness arises in them - turned indignantly towards me. Not my clumsiness outraged them, but the squandering of expensive beverages. I relished their disapproval“ (“Die Gesichter, die sich auf der Schwelle dieses Ladens alle wie unter einer starken Strahlung verändern – Gier, Rücksichtslosigkeit kommt in ihnen auf – wendeten sich empört mir zu. Es entrüstete sie nicht meine Ungeschicklichkeit, sondern die Vergeudung teurer Getränke. Ich genoß ihre Missbilligung“; 68).

Now, the narrator wants to wake up, but she cannot. The narrator still has unresolved conflicts with Marxism and the GDR society. The narrator continues with a Marxist criticism of the society of the GDR. Two women discuss an exploitive boss “who supposedly sucked the blood from the body of the skinny one. Yes, sucked dry“ (“der Dürren das Blut aus dem Leibe gesaugt haben sollte, ja: ausgesaugt“; 69). The fragment shows the exploitation by GDR Marxism. The narrator meets a young man in the Lindencorso. He asks, “What do you want then? The old circumstances,” (“Was willst du noch? – Die alten Verhältnisse”; 71) and then says, “Regrettably, we can only bind ourselves to the world through love“ (“Wir, bedauerlicherweise, können mit der Welt verbinden“; 71). Marxism cannot solve the conflict. Only love can, and here love represents the romantic consciousness. Finally, the romantic consciousness becomes the new generalized other of the narrator. The narrator has a new identity. The narrator wakes and sees a self-confident girl whom she recognizes immediately as herself. The girl is an individual and represents the new generalized other. She has individuality and weight.

The sociology of knowledge makes available a structure for the analysis of the conflicts in Unter den Linden. The Sociology of knowledge identifies three sources of the conflict - Socialization in Marxism, Socialization in the GDR and Socialization in the romantic tradition. There are three conflicts under every pair of the socializations. The personal betrayal and the next seclusion in the electric light bulb factory cause the need for a new identity and re-socialization in the romantic literary tradition. The narrator develops a new romantic consciousness and new generalized other. But, the story ends where it begins. The narrator says to the reader that it is the street Unter den Linden where she “always to stroll with pleasure“ (“ . . immer gerne gegangen”; 75). For German Romanticism and the sociology of knowledge, the socialization of the individual is never completed.

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Analysis of Forest Floor Invertebrate Populations on the Rouge River Floodplain, Dearborn, Michigan, Fall 2004

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The forest floor of the Rouge River floodplain in the Natural Area of the University of Michigan- Dearborn is covered with variety of herbaceous vegetation and a hydro period ranging from annual floods to 15-year floods. However, for years the forest floor invertebrate populations of these habitats have largely been unknown. For twelve weeks in the fall of 2004, I collected invertebrates using three techniques, namely, ground traps, leaf debris sample screening, and soil sample screening. Of these three methods, invertebrate ground traps proved to be the most productive. I collected more than thirty species, finding the number of individuals of each species to be typical of most species diversity patterns with a few species (crickets and Ground Beetles) present in great numbers and most species having low numbers. The diverse species are represented in a variety of functional niches, which include; herbivores, carnivores, omnivores and detritivores. This analysis will relate to future studies of bird populations and before and after studies on the removal of invasive species such as Garlic Mustard and Common Buckthorn.

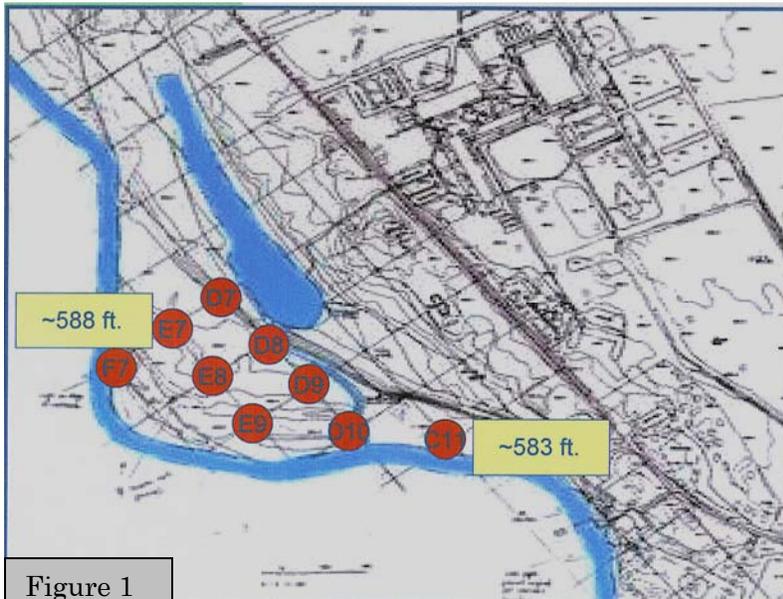


Figure 1

with the large opening the same diameter as the cup (Figure 2). The funnel is placed inside the cup, as so the large opening rests just on the lip of the cup. As the funnel narrows into the depth of plastic cup, an overhang is created which prevents any escape from the system. The assembly is then set into a dug out hole of equal size, so that the lip of the cup and funnel sit flush with the ground. Any necessary back filling is done to achieve a natural landscape, and the cup is filled with one quarter of an inch of ethanol glycol. Any invertebrate walking over the surface of the ground is most likely to fall into the trap and not be able to escape.

I placed nine ground traps throughout the Natural Area. These locations were strategically placed at hectare markings in the forest and represent slightly different environments, in terms of elevation. The Natural Area has been mapped into hectare units, and consists of elevations ranging from approximately 583 to 590 feet above mean sea level (Figure 1). Locations were chosen by Dr. Gelderloos, and range through hectares named C11, D7, D8, D9, D10, E7, E8, E9 and F7).

Ground Traps

The ground traps consist of a medium sized plastic cup and a funnel

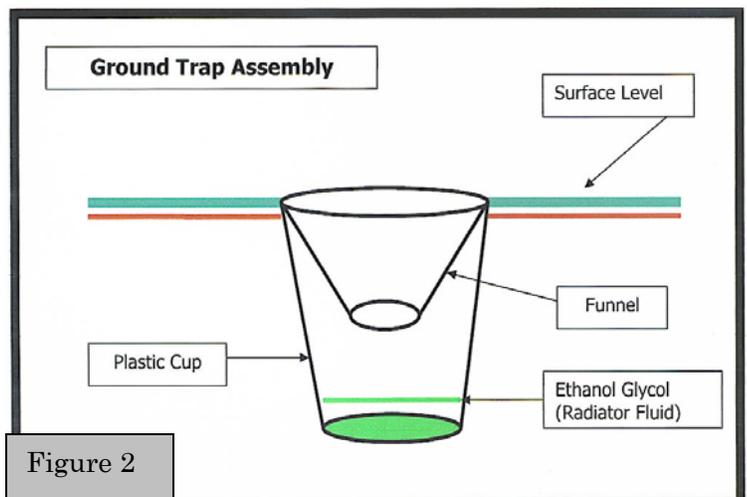


Figure 2

The ethanol glycol used for this study was taken from a slightly diluted sample of radiator fluid. Ethanol glycol serves multiple purposes in the traps as the invertebrates that fall into it. First of all, the fluid is much thicker than water and has somewhat of a sticky texture that helps prevent fallen invertebrates from escaping. Second, the chemical make-up of ethanol glycol aids in preserving the enclosed insects. This substance, combined with the strategic design of the cup and funnel, creates an efficient ground trap.

Results

The ground traps resulted in the collection of twenty-nine species, ranging through the Phyla; Arthropoda, Mollusca and Annelida. All invertebrates were identified to at least order, twelve to family, three to genus, and eight to species.

Of these twenty-nine species collected, beetles of four species in the Carabidae Family made the greatest overall appearance in the ground traps. This isn't particularly an unusual finding, as over 450 species of Ground Beetles are found in Michigan alone (Dunn 163). However, when the data of these four similar species are combined, they total 127 individual invertebrates. This representation of Ground Beetles stands out as the largest overall group collected in the ground traps. The habits and descriptions of this large Family can actually give clues and information about the surrounding community and ecosystem.

As one might assume, "Ground" Beetles do in fact live and travel along the forest floor. Collecting large numbers of these insects follows logically within our method of collecting through ground traps. However, it should be recognized that these species are often known to be found in large groups (White 86). But more importantly is the fact that such beetles can be omnivorous, feeding on grass seeds and herbaceous plants; or predaceous, feeding on dead or dying insects. Ground Beetles are even known actively pursue their prey, which specifically includes insect pests, snails and slugs, as well as cutter worms and maggots (Swan and Papp 338), (White 86).

Ground Beetles collected in the Natural Area truly have an important niche in the community, as they eat both dead and dying matter, as well as living tissue. It is possible that the large number of beetles recovered could spell bad news for such herbaceous plants. However, from this study, it is not completely clear what effect the Ground Beetles will have on these local plants. Of either food source, it is my belief, that the large number of beetles could be a result of an ample food supply, allowing them to flourish. And since we know these beetles are also predaceous, more can be learned by inspecting other data collected from the experiment.

At least two species of slugs were recovered in large numbers throughout the Natural Area ground traps. Twenty-four individual Giant Spotted Garden Slugs (*Limax maximus*) and thirty-five Field Gray Slugs (*Deroceras reticulatum*) totaled fifty-nine Gastropods. I feel that the sweet smelling ethanol glycol could have played an important part in the entrapment of these species, as slugs can detect food by sense of smell (Palmer and Fowler 415). More importantly, these omnivores break down dead and living matter, which is in large supply throughout our forest. We already know slugs are preyed upon by Ground Beetles, so it is possible that a large stock of slugs could in fact promote the advance of the species of Ground Beetles in the Natural Area. The slow moving and smaller Field Gray Slug, that averages 1.5 inches, might be a particularly easy target for a predaceous beetle. Also worth noting, both species of slugs and all species of Ground Beetles were found at the same ground trap sites. Most likely, the beetles have an ample food supply greater than just slugs, but any possible correlation should be examined to better understand our studied community.

And further, the supporting evidence for the health of the Natural Area community continues in the large numbers of Crickets. Species of Cave Crickets had the greatest overall distribution, being found in 8 of the 9 location, totaling 98 individuals. This large area suggests that this species is most likely abundant throughout the much of the Natural Area. These species are very common to both moist and dry woodlands, as well as caves, and can be found under the typical log or leaf debris (Dunn 89). Preyed upon by spiders and other predators, these crickets themselves feed on meat, fruit, vegetables, and almost anything organic (Palmer and Fowler 445). These creatures have a great variety in their diet. This allows them to be generalists, and prevents the species from having to search for only one type of food. This particular trait secures survival in numbers over a greater range and gives practical evidence for their success in the Natural Area.

Sow bugs, or pill bugs, also showed up in distinct numbers throughout this experiment. Forty Sow Bugs were caught in 8 of the 9 sites, which also equaled the greatest distribution. They too have a role in our

Natural Area, as they consume dead or dying plant material. Again, this scavenger helps the recycling process as it breaks down organic material into compost (geocities.com). Sow Bugs are actually Crustaceans that require moisture to breath through gills. So, although I found this species at almost all of my ground traps, I wouldn't expect to find these creatures distributed so evenly throughout the entire Natural Area, as moisture levels vary. Sow bugs also link into the food chain as food for many predators throughout the forest (Palmer and Fowler 430).

This theme is again reinstated in the evidence of Millipedes and Harvestman. These species help effectively balance the community as Millipedes feed on decaying plant material and the Harvestman eats small insects, animals, and decaying or dead matter (Palmer and Fowler 433), (Borrow and DeLong 775). Further analysis of the other twenty plus remaining invertebrates collected in the ground trap experiment will continue to show this proof of a healthy food chain and community. Predators, herbivores, scavengers, and even detritivores continue to represent the checks and balances of the very diverse UM-D Natural Area.

Distribution

As mentioned previously, Cave Crickets and Sow Bugs had the greatest overall distribution, being found in eight of the nine trap locations. However, many species were not widely distributed throughout the flood plain. This is typical of species distribution patterns, with a few species greatly distributed and many species found in only a few locations. However, this study is also representative of species diversity patterns. Only a few species, such as Cave Crickets and Ground Beetles were found in very large numbers, while many species were found in low numbers.

It is also important to recognize that hectare D7 yielded a significantly higher number of recovered species. D7 represented 19 different species, while the mean average per trap was only 9.9 species. One hypothesis for these findings is that D7's location may have played an important role. D7's elevation is approximately five feet higher than most of the other trap locations. This could result in a slightly different environment, as other hectares lower on the flood plain will experience periods of standing water, at certain times of the year.

It is also important to recognize the total hours of trapping. For twelve weeks, ground traps were functioning seven days a week, for twenty-four hours a day. This equals 2,016 hours per trap. And all nine traps combined totaled 18,144 trapping hours. I feel this extensive use of ground traps delivered a valid sample of invertebrate populations living on the surface of the Rough River floodplain.

Although invertebrate ground traps produced the highest yields of the three experiments, it is worthy of noting the findings of the leaf debris sample screening as well as the soil sample screening.

Leaf Debris

Leaf debris samples were collected from the same nine hectare marking sites, as used in the ground trap experiment. I used plastic bags to collect approximately one square foot area of leaf debris, from each site. I then placed these leaf samples in individual Berlese (or Tullgren) Funnel screening traps. These traps consisted of a very large funnel, a small beaker, a stand with clamps, and a warming lamp (Figure 3). Assembled, the funnel hangs from the stand and feeds into the small beaker. The screening sits inside the funnel and the warming light shines down into the top of the funnel. The concept is completed as a leaf debris sample is placed on the screening, inside the large funnel. As the warming light shines down on the leaf debris sample, any invertebrates living in the sample will be influenced to

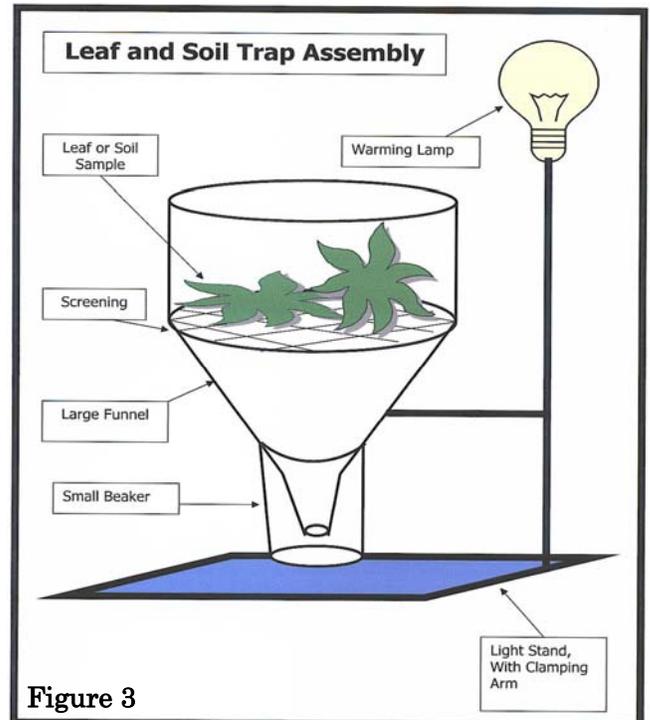


Figure 3

move down through the screening and funnel, then down into the beaker where they will remain entrapped. This is a very innovative method of collecting invertebrates that live in leaf debris. Unfortunately, I had limited results using this technique.

Results

I was only able to recover seven different species in limited quantities throughout the leaf debris sampling. However, this number may not actually be completely representative of the species living in the leaf debris. In fact, while the use of the screening trap is very innovative, the technique is flawed or at least limited. When collecting samples of leaf debris, one can only hope to collect any invertebrates living or traveling within that square foot sample, at that time. This of course limits results to the exact time and location the sample is taken. This greatly differs from the use of the ground traps, which are in effect left to sit and “fish” for invertebrates over the course of several days. A ground trap would naturally be more productive by interfering with invertebrates traveling through each sites location. In this respect, low yields for leaf debris research should be par for the course. And therefore, recovering only seven different species might not be as low a count as it sounds.

From the ground trap data we already know there are many more species living on the ground and within leaf debris. It is my opinion that the leaf debris findings actually reinforce the ground trap data. Considering the chance that it takes to recover invertebrates through leaf debris screening, seven species could actually be representative of a diverse community.

The species collected in leaf debris, are also quite consistent with the ground trap findings. Species of Ground Beetles, Sow bugs, Harvestman, and several spiders were recovered. Most significantly, the several species of spiders recovered likely represent the top predator amongst our invertebrate community. In particular, one impressively large male Nursery Web spider was recovered from leaf debris in D8. Several other very small or immature spiders were also collect from near by sites. With large numbers of Cave Crickets and other prey available in the same area, predators are almost insured successful existence. It is my feeling that the leaf debris screening experiment not only reinforces the ground trap data, but is actually an extension of the ground trap experiment itself.

The last experiment involving invertebrate collection revolved around soil sample screening. This experiment closely followed leaf debris screening and used the same entrapment system, but with small adjustments. First, 2 to 3 inches of top soil were collected from a small area at each site. Then, a second layer of screen was added to the funnels in the lab. This would allow for the soil to be screened and caught, without it all pouring through the funnel and into the bottom of the small beaker.

Unfortunately, this experiment had very minimal results. I was only able to recover two species that include a total of three Earthworms and three very small Field Gray Slugs. Although this collection technique is limited in the same ways that the leaf debris method is limited, it is unclear if my findings follow the previous two experiments. At first thought, one might not expect to find very many invertebrates living directly in the soil. It is also possible that the lack of invertebrates recovered could be from low levels of life within the soil. However, with the diversity found in the previous two experiments, one might also expect to find a rich and diverse community extending into the soil. The bottom line is that I feel this experiment was unable to describe the quantity or quality of life in the soil of the Natural Area. I feel that once soil samples were placed in the soil screening traps, any invertebrates living in the soil might not be motivated to travel down into the beaker. Although the same warming light was used as a drying technique and motivator, the invertebrates confined to the soil may have chosen to stay within the soil sample as means of protection. In future experiments, new innovations should be considered to improve soil sample screening techniques and yields.

Throughout the 12 weeks of invertebrate collection experiments, much has been learned about the community within the University of Michigan-Dearborn's Natural Area area. I have been able to identify over thirty different species of invertebrates living on the ground, within leaf debris, or in the soil. These species represent a balanced invertebrate community, with equal checks and balances. Predators, prey, recyclers and scavengers are all represented here. The invertebrates collected show a solid foundation of life amongst the forest floor and represent typical distribution and diversity patterns. However, it is my belief that the diversity and balance found with the invertebrate experiments are most likely be reflective an overall healthy and diverse community and ecosystem.

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The Hook-up: An Analysis of Sexual Encounters in Emergent Adulthood

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Abstract

In recent years, dating customs on many university campuses have shifted significantly. One type of sexual event increasing in frequency is the “hook-up”. This study, focusing exclusively on females, aims to both describe a typical hook-up and examine what implications result from involvement in hook-up activities. The impact of this sexual behavior on psychological processes will be highlighted. Data was generated to ascertain the dating practices, psychological wellness, and values of college students (N=133) between the ages of 18 and 25 years. It was found that hook-ups were more prevalent among females in Greek affiliations. In addition, analysis revealed that a significant proportion of variance in the participant’s feelings after a hook-up experience could be attributed to the following factors: satisfied with the outcome, drunk or pressured, and longing for more. These factors were used to derive four distinct groups based on the individual’s reaction to the hook-up experience.

Introduction

Emergent adulthood is a stage of development that offers unique opportunities for identity exploration in areas of love, work, and worldviews (Arnett, 2000). Due to reduced parental supervision and the relative lack of normative expectations to get married or become a parent, this period is often filled with a variety of romantic and sexual experiences. As of recently, exploration in the area of love and sexuality has transformed and has come to include a phenomenon known as the “hook-up”. A hook-up is a sexual encounter between two individuals who are informal acquaintances or strangers, normally only one night in duration and without the prospect of maturing into a relationship (Paul, McManus, & Hayes, 2000). The term ‘hook-up’ is used informally to describe a wide variety of casual sexual activities, which may or may not include sexual intercourse. A previous study found that 70% of the college-aged subjects had engaged in hook-up activity and reported an average of 10.28 hook-ups during college (Paul & Hayes, 2002).

Previous research regarding hook-ups has been relatively limited. This deficiency may be due to the ambiguity and mystery that has traditionally surrounded the term ‘hook-up’, perpetuated mainly due to fact that the term is used almost exclusively by individuals in the emerging adulthood period. Deficiencies in research may also be due to that fact that hook-ups have only recently increased in popularity, and, thus, this deficiency may likely be corrected in the future. Regardless, it is critical that research that demystifies the hook-up is obtained. By defining the typical hook-up, we are better able to identify and address its implications, such as serious health matters such as sexually transmitted diseases, psychological pathology, and sexual violence. Research has demonstrated that peer group norms in sororities and fraternities might be different from those held by dorm residents or commuter students. It has been established that the norms of Greek social organizations include: using alcohol heavily, behaving in an

uninhibited manner, and engaging in casual sex (Martin & Hummer, 1989; Norris, Nurius, & Dimeff, 1996). Given these conditions, the findings of our study may be useful in the planning of sexual education programs specifically targeted at Greek organizations. The information gained may also be valuable in determining whether or not hook-ups should be addressed in high school sexual education curriculum, before individuals enter emergent adulthood.

Prior research has found that hook-up activity is correlated with current romantic relationship involvement (i.e. those involved in relationships are less likely to experience hook-ups) (Paul, McManus, & Hayes, 2000). A previous study also found that males and females do not differ significantly in the frequency of hook-up experiences (Paul & Hayes, 2002). However, it was also found that males are more likely to engage in sexual intercourse during a hook-up (Paul, McManus, & Hayes, 2000). Social, personality, and individual psychological variables predict variances in hook-up experiences (Paul, McManus, & Hayes, 2000). In addition, hook-ups are often described with emotional ambivalence and involve deep ego involvement, and thus may involve psychological risk (Paul & Hayes, 2002).

This research also attempted to explore issues that have been neglected in past studies. One such issue includes an exploration of hook-ups to a greater depth than previous research, especially in female populations. The current study was also designed to explore any patterns or themes in the outcomes of hook-ups, as well as compare the occurrence of hook-ups in sorority populations from those in non-sorority populations. In addition, the present research addresses issues that previous studies have recommended be explored in greater depth. These issues include: specific sexual behaviors that take place during non-coital hook-ups, and the emotional effects and risks of hook-up experiences (Paul, McManus, & Hayes, 2000).

The principal questions guiding this study were:

1. What characteristics define a typical hook-up for females? (i.e. setting and behaviors)
2. What characteristics distinguish females who have experienced a hook-up from who have not experienced a hook-up?
3. What types of outcomes and feelings do females experience following a hook-up?

Methods

Participants

A convenience sample of 214 undergraduate students between the ages of 18 and 25 from a large mid-western university completed a detailed self-report questionnaire assessing a variety of college experiences. For the purposes of this report, we only utilized responses from the 133 female participants. Participants were recruited through the introductory psychology subject pool and by offering monetary compensation. The mean age of those in the sample was 19.50 years. The sample was predominantly composed of Caucasian, heterosexual females. The survey addressed the following issues: current dating practices, sexual beliefs and experiences, psychological well-being, life goals, and experiences of sexual assault. The survey also collected demographic information such as age, sex, ethnicity, and affiliation with 'Greek' organizations.

Measures

Hook-up experiences. Questions used to assess hook-up activities were constructed based on findings of Paul and Hayes (2002) and Paul, McManus, and Hayes (2000). Items assessed the average number of hook-ups an individual engages in, the individual's age at the time of the first hook-up, the number of people involved in the activity, the location of the

encounter, what sexual behaviors occurred, and what took place following the event. Fifty-one questions assessing how students described their feelings about their hook-up experiences were also used.

Alcohol use. Questions assessing alcohol use were derived from the findings of the College Alcohol Survey (Wechsler, Davenport, Dowdall, Moeykens, and Castillo, 1994). This survey measured the health and behavioral consequences of binge drinking at 140 college campuses. The derived questions were used to measure yearly and monthly occasions of alcohol use, and incidence of binge drinking during a two-week period.

Results

Hook-up Characteristics

A majority (69.9%) of the females reported having been involved in a hook-up experience. An average of 7.82 hook-up experiences were reported. The mean age of the first hook-up experience was 16.1 years. The majority of hook-ups (92.4%) involved one other person, most frequently a male (100.0%). The majority of hook-ups took place at a residence hall or house (53.5%), followed by a fraternity party (20.9%) or another type of party (11.6%). Although a limited number of hook-up experiences involved vaginal intercourse (14.1%), oral sex was reported in 35.9% of hook-ups. Hook-ups involving kissing (78.3%) and petting (53.3%) were frequently reported. In addition, only 15.2% of hook-ups resulted in a dating or romantic relationship, while 29.3% resulted in a friendship and 21.7% resulted in a subsequent hook-up. Participants later avoided each other in 9.8% of hook-ups.

Characteristics of Hook-up Participants

A greater percentage of the females with a Greek affiliation (social sororities) engaged in hook-ups than those females without a Greek affiliation (84% vs. 61%, $p < .004$). Sorority females who participated in hook-up activities more commonly reported engaging in vaginal intercourse ($p < .09$) and oral sex ($p < .015$). This group also reported feeling more attractive after their hook-up experience ($p < .027$) and feeling comfortable with their hook-up partners ($p < .027$). In addition, Greek-affiliated females were less likely to change their mind regarding the hook-up experience ($p < .028$) and were more likely to hook-up again ($p < .014$).

Hook-up Outcomes

Principal component analysis was used to reduce the 51 items assessing the participant's feelings after a hook-up experience. Three factors were extracted accounting for 43% of the total variance. These factors were labeled as the following: satisfied with the outcome, drunk or pressured, and longing for more. Examples of items characterizing the satisfied with the outcome factor include: "would do it again if I could", "satisfied with how it turned out", and "felt in control of what happened". Items that illustrate the drunk or pressured dimension include: "person pressured me into doing things I did not want to do by trying to get me drunk or high", "I regret it happened," and "I was too drunk to control what was happening". Lastly, the items that exemplify the longing for more factor include: "when it was happening I thought the other was interested in more, now I realize it was just a hook-up", "I wanted a relationship to develop, the other did not", and "I worried about my sexual performance". A k-means cluster analysis procedure was conducted, and the three factors were employed to derive four groups based on the individual's reaction to the hook-up experience. These groups included:

1. Satisfied: felt highly positive about the hook-up experience and possessed very low feelings of regret/pressure and longing/wonder (n = 37)
2. Longing-Conflicted: had high feelings of longing/wonder, moderate feelings of regret/pressure, and low positive feelings towards the hook-up (n = 8)
3. Pressured: had moderate feelings of regret/pressure, and low positive feelings and feelings of longing/wonder (n = 20)
4. Longing-Positive: felt highly positive about the hook-up experience, had moderate feelings of longing/wonder, and had low feelings of regret/pressure (n = 29).

Group Differences Between group differences were revealed on a number of variables when Chi square analyses or ANOVA procedures were employed. In addition to the descriptions that follow, tables summarizing the effects are included in the appendices.

The Satisfied group was found to have no significant differences in Greek affiliation (53% Greek, 47% non-Greek). However, they were associated with high levels of binge drinking ($p < .024$). They also reported a significantly less hook-up experiences ($M=5.74$) than the Longing-Positive Longing group ($p < .05$). In addition, a majority reported nothing occurring after the hook-up (52%), a moderate proportion reported that dating occurred after the hook-up (12%), and a minority reported the occurrence of another hook-up (18%).

The Longing-Conflicted group was found to be predominantly composed of non-Greeks (88%) ($p < .028$) and reported low to moderate levels of binge drinking. Members of this group did not differ significantly from other groups in the number of hook-up experiences reported. None of the participants in this group reported that nothing occurred after the hook-up (0%) (i.e. ‘something’ happened) and none reported that dating occurred after the hook-up (0%). However, a majority reported the occurrence of another hook-up (63%).

The Pressured group was found to have no significant differences in Greek affiliation (55% Greek, 45% non-Greek) and reported low to moderate levels of binge drinking. This group reported a trend of less hook-up experiences ($M=5.35$) than the Longing-Positive group ($p < .06$). A majority of this group’s members reported nothing occurring after the hook-up (60%), while a low proportion reported that dating occurred after the hook-up (5%) and no participants reported the occurrence of another hook-up (0%).

The Positive-Longing group was found to be predominantly composed of Greek-affiliated females (71%) ($p < .028$) and was associated with high levels of binge drinking ($p < .024$). Members of this group reported a significantly higher number of hook-up experiences ($M = 12.41$) than the Satisfied group ($M = 5.74$) ($p < .05$) and a trend of a higher number of hook-ups than the Pressured group ($M = 5.35$) ($p < .06$). A minor proportion of this group reported that nothing occurred after the hook-up (23%) (i.e. ‘something’ happened). Further, a moderate proportion reported dating after the hook-up (29%) or that another hook-up occurred (29%).

Discussion

Through our analysis, we discovered that “hook-up” is a highly ambiguous concept that is used to characterize a wide range of behaviors. The popularity and widespread use of such an ambiguous term may be related to a variety of functions, including: protection from peer judgment, maintenance of a sense of modesty or tastefulness, and the potential to have others believe that one was either more or less intimate than they actually were.

By examining hook-ups as opposed to ‘casual sex’, we are able to gain a more comprehensive understanding of college student’s sexual behaviors, both coital and non-coital.

The previous finding by Paul & Hayes (2002) that a majority (70%) of college-aged subjects had engaged in hook-ups activity was supported and expanded by our finding that 69.9% of females reported having a hook-up experience. Our analyses revealed significant between group differences. We found that a greater percentage of females with Greek affiliations engaged in hook-ups than those females without a Greek affiliation, and that those with Greek affiliations engaged in more intimate and risky sexual behaviors (i.e. vaginal intercourse and oral sex). In addition, those with Greek affiliations were more likely to engage in additional hook-ups in the future. One implication of these results may point to the necessity of implementing risky sexual behavior prevention programs that are targeted to or sponsored by social Greek organizations.

Through the analysis of hook-up outcomes it is apparent that the effect a hook-up has on an individual is based largely on their *perception* of the hook-up and *not* the behaviors actually involved. This is demonstrated in the finding that none of the four clusters were significantly associated with sexual intercourse or any other specific sexual activity. In addition, we suggest that the term hook-up has multiple definitions among emergent adults. One way to distinguish between these definitions is to compare the *Hook-up* with a hook-up. The *Hook-up* was defined in our survey as “a sexual encounter – which may or may not include intercourse between two people who are strangers or brief acquaintances, usually only one night without the expectation of developing a relationship.” This activity serves an experimental or exploratory function for the participants. It may initiate a relationship or provide the means to determine whether or not to pursue a relationship. Conversely, the term hook-up serves a more ambiguous function, and may be used to refer to a casual or romantic encounter, or it may simply refer to making contact or meeting another person (“I am going to *hook-up* with my friend for coffee.”). This term is extremely popular among emergent adults. It may provide a sense of sophistication, style, or merely separation from their parent’s use of language.

Future research on hook-ups (of either the *Hook-up* or hook-up variety) should explore issues that have been neglected by the current study or previous research. Future research should examine the individual’s relationship or prior contact with their partner prior to the hook-up event. It should also study more thoroughly the relationship between hook-up activity and other risky behaviors (i.e. alcohol and drug use, unprotected sexual activity). In addition, it would also be useful to examine hook-up activities among males in general and those affiliated with social fraternities, as well as the occurrence of hook-ups in preteens and adolescents. Finally, there is a need to research hook-ups using a more ethnically diverse sample.

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Ice-Catalyzed Ionization of HCl

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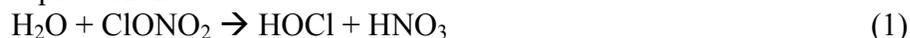
Abstract

Ionization of hydrochloric acid on stratospheric ice particles is believed to be very important to the depletion of stratospheric ozone. *Ab initio* and hybrid Quantum Mechanics/Molecular Mechanics (QM/MM) are used to investigate the HCl ionization process using HCl-water cluster and embedded cluster model. The difference between *ab initio* and QM/MM results are discussed.

Introduction

Ozone depletion has been investigated all over the globe for more than 20 years. It has been discovered that most ozone depletion occurs at high altitudes. The ozone layer is capable of absorbing much of the harmful ultraviolet radiation produced by the sun. Ultraviolet radiation is the leading cause of death due to skin cancer. Conservation of the ozone layer is crucial for the safety of life on earth. This is a life threatening issue that is increasing by the day. Many efforts have been made into thoroughly understanding the chemical cause of this disaster.

Depletion of this ozone layer and the formation of ozone holes are linked to the presence of polar stratospheric clouds (PSCs). These particles provide surfaces for nearly inert reservoir species (ClONO₂ and HCl) to be released into more active forms. The main reaction is the hydrolysis of ClONO₂ that produce HOCl (reaction 1). Then crossing reactions between HCl, HOCl, and ClONO₂ (reactions 2 and 3) can produce Cl₂, which photodissociates to Cl atoms that react with and deplete ozone^{2,7-8,12}.



Although ozone depletion is thought to be caused to a great extent by catalytic reactions of ozone with chlorine radicals, it is believed, to a smaller extent, to be caused by reactions with bromine radicals. The corresponding question for hydrobromic acid HBr has received less attention, particularly from a theoretical viewpoint, though they are believed to have the same reactions as HCl (reactions 4-6)¹³⁻¹⁴. Important features here are that, despite the lower concentration of bromine compared to chlorine compounds, bromine has a higher capacity than chlorine, on a per atom basis, to deplete ozone, and that bromine reservoir compounds, compared to their chlorine analogs, have shorter life-times¹³. Heterogeneous bromine chemistry is likely to involve the mixed reaction 7 and the readily photolyzable bromine species BrCl and Br₂ are effective in gas-phase catalytic ozone destruction¹⁴.



The structure and composition of PSC particles has not been unequivocally identified, they are believed to consist primarily of water and provide surfaces for heterogeneous catalyzing processes, which have been recognized as playing a key role in the chemistry of the

stratosphere¹². In reactions 2 and 3, there is substantial experimental evidence that HCl exists in its ionized form on ice surfaces under stratospheric conditions and on low-temperature ice surfaces under vacuum, and that surface phase chloride ions (Cl⁻) react with the chlorine reservoir molecules in reactions 2 and 3 to produce Cl₂. Because ClONO₂ and HOCl are molecularly adsorbed on the ice surface, the Cl⁻ ion must be on or near the top of the ice surface for reactions 2 and 3 to occur. Therefore, the adsorption and dissociation of HCl and HBr on the ice surface is the critical step to understand the reaction mechanism of the ozone depletion.

Numerous of studies, both experimental¹⁵⁻¹⁷ and theoretical¹⁸⁻²⁰, have been initiated to investigate this world-wide problem. However, two obstacles restrict us in obtaining clear chemical insights into the reaction mechanisms. For the experimental studies, extreme experimental conditions, as well as the very short life-time for most species involved in this heterogeneous process, made the experimental progress relatively slow. Compared to the experimental studies, theoretical studies are more feasible for the dissociations of HX on smaller water clusters. But the computational costs for the *ab initio* treatments, which may give us more accurate results, increase exponentially with increasing of numbers of water molecules. So far, only 5-6 water molecules can be included, and they cannot simulate the ice surface because they are pretty floatable¹⁰⁻¹⁴.

Ice surface may include a large number of water molecules, bound by stronger hydrogen bonds. The adsorption and dissociation of HX may occur only at a small part of the ice surface, which can be called by the reactive site. The other water molecules in the ice framework, compared to the water molecules at the reactive site, may have relatively smaller changes in geometry. Therefore, it is reasonable to include only HX and a few water molecules at the reactive site and treat them using the accurate *ab initio* method. It is the cluster models, which were widely applied in the previous studies.

Although the geometries of water molecules in the ice framework do not change significantly, they do have very important effects on the structure and stability of the reactive site²¹. However, the inclusion of such a large number of water molecules in the *ab initio* treatment is computationally prohibitive. One solution is to treat those using computationally inexpensive molecular mechanics methods. Therefore, the whole system can be divided into two parts, HX and water molecules at the reactive site, which are being treated using the accurate *ab initio* methods, and water molecules in the ice framework, which are being treated using the low-cost molecular mechanics method. As a result, both changes at the reactive site and the effect of the framework can be taken into account at the same time.

The method being applied in this study is called Effective Fragment Potential Method (EFP)²²⁻²⁴ (described in details under “Methods/Techniques” section). All calculations described in this work were performed using the electronic structure code GAMESS²⁵ and geometries are viewed using MacMolPlt²⁶.

Methods/Techniques

The EFP model divides the whole large system into two parts, the “active region” (AR) and the remainder:

$$H_{TOT} = H_{AR} + V \quad (8)$$

The AR contains the solute (HX) and any water molecule (at the reactive sites) directly involved in a bond forming/breaking process. The AR is explicitly treated with the conventional *ab initio* wavefunction of choice. The remainder of the system (a large number of the water molecules in the ice cluster) is represented as a sum of effective fragment potentials V . There are three one-

electron terms in V: (1) Coulombic interactions; (2) polarization interaction, and (3) exchange repulsion, charge transfer, and dispersion. For the μ th solvent molecule, the effective fragment potential interaction with the solute is given by

$$V_{el}(\mu, s) = \sum_{k=1}^K V_k^{elec}(\mu, s) + \sum_{l=1}^L V_l^{pol}(\mu, s) + \sum_{m=1}^M V_m^{Rep}(\mu, s) \quad (9)$$

where s is the nuclear coordinate; k , l , and m are the number of expansion points for Coulombic, polarization, and exchange repulsion interactions, respectively.

Computational Details

All *ab initio* calculations are performed at Density Functional Theory levels with 6-31G(d) basis set. Effective Fragment Potential calculations are done using EFP/DFT method with the same basis set. In HX with 4 waters cluster, three waters are treated as the fragments and the only one accepting the transferred proton is treated using the *ab initio* method. GAMESS computational chemistry suite is used for all calculations and MacMolPolt is used for graphic visualization. All calculations are performed on Emac.

Results and Discussions

EFP can predict the geometries of **a** type of HX+4 water cluster in a close agreement with DFT method. But for **b** type, the result is not very good. The possible reason is that EFP is developed to describe the weakly bonding, like hydrogen bonds. In structure **a**, only hydrogen bonding are important, while there is the competition between hydrogen bond and chemical bond in structure **b**. In both cases, EFP can predict the relative energies qualitatively correct. If all molecules involved in bond formation/breakage are included in *ab initio* treatment, EFP should be able to predict the rest of water molecules connected by hydrogen bonds.

Table 1. Bond distances, angles, and relative energies of HBr+2 water cluster calculated at the different theory levels ^a.

Structure	Method	r ₁ (Br-H)	r ₂ (O-H)	r ₃ (O-H)	Br-H-O	Relative Energies (mH)
a	DFT	2.228	1.541	1.039	161.5	0.000
	EFP	2.240	1.545	0.993	153.3	0.000
b	DFT	2.093	1.612	1.033	163.3	4.939
	EFP	1.881	1.670	1.100	153.3	4.615

^a Bond distances in Å and angles in degrees.

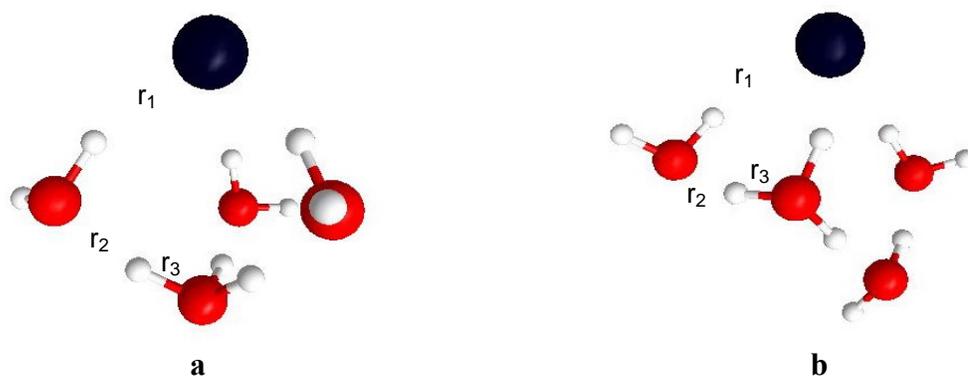


Figure 1. Structures of the HBr + 2 water clusters.

Table 2. Bond distances, angles, and relative energies of HCl+2 water cluster calculated at the different theory levels ^a.

Structure	Method	$r_1(\text{Cl-H})$	$r_2(\text{O-H})$	$r_3(\text{O-H})$	Cl-H-O	Relative Energies (mH)
a	DFT	2.114	1.540	1.039	157.8	0.000
	EFP	2.162	1.547	0.993	150.7	0.000
b	DFT	1.937	1.622	1.037	154.4	5.768
	EFP	1.720	1.684	0.973	165.3	3.562

^a Bond distances in Å and angles in degrees.

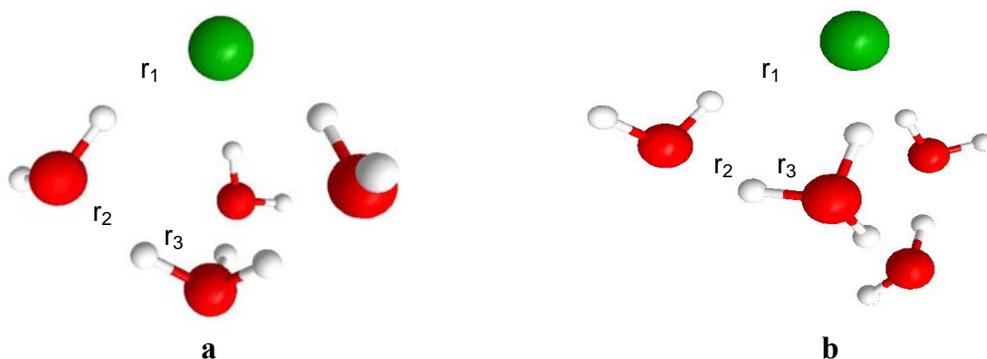


Figure 2. Structures of the HCl + 2 water clusters.

First step to simulate the dissociation of HX on ice surface is to investigate the the reaction mechanism on reactive site. In this study, 6 water molecules connected by hydrogen bonds are used to simulate the ice surface. Ionization happens between HCl and a dangling water molecule. So far, both reactant and product are optimized using DFT method. The results show that Cl can form hydrogen bonds with hydrogen atoms pointing out of the ice surface. As a result, the electron cloud is pulled away from H-Cl bond and the hydrogen atom in HCl becomes

more electron positive. Since the distance between this hydrogen and the oxygen atom in the dangling water molecule is not too far away (1.793 Å, in the range of hydrogen bonding), it is possible to form the stronger and more stable O-H covalent bond. The charge transfer is observed between HCl and the dangling water molecule. The calculated product shows that the distances between Cl and the hydrogen atoms pointing out of the plane are 2.356 and 2.533 Å, compared to 2.835 and 2.897 Å in the reactant. Due to the charge transfer, the distance of H-Cl increases from 1.293 to 1.846 Å, which indicates the breakage of H-Cl bond.

Efforts are spent to search for the transition state. After that, water molecules will be added to simulate the real ice surface and treat them using EFP method. Based on EFP results, the effect of the environment can be elucidated.

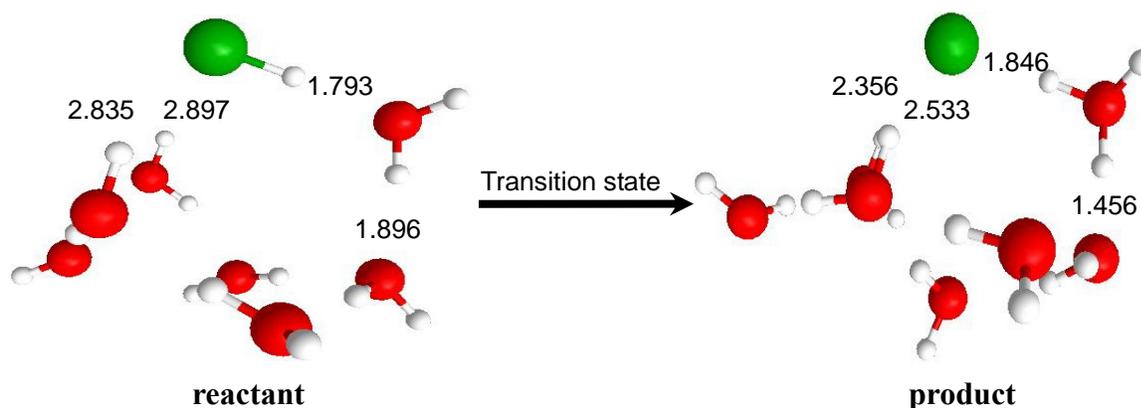


Figure 3. Structures of HCl+water on Six water clusters

Summary

A group of water molecules are used to represent the ice surface. Ionization of HCl involves a dangling water molecule above the ice surface. Dangling water molecule, HCl, and ice surface are connected by the hydrogen bonds. The structures before and after ionization are optimized at the DFT level. Calculations to seek for the transition state are being carried on. More water molecules will be added to simulate the ice surface and include the surface effect. Additional water molecules will be treated by EFP method without increasing the computational expenses greatly.

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The Dilemma of Divine Foreknowledge and Human Freedom

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Theologians have traditionally been willing to ascribe the property of omniscience to God. However, if God is omniscient, then he knows the future before its actual occurrence. And if his knowledge is infallible, then necessarily all he knows or believes is true. Most people do not realize the profound implications of attributing these properties to God. An omniscient being would know at time t_0 that Smith would partake in a given action at t_1 . Suppose that t_1 were May 25, 2005 at 6:00 AM; at this time Smith's alarm clock went off, thereby telling him that he should get up and ready himself for his workday. At t_1 , it seems as though Smith could have either risen from his bed to get ready, or hit the snooze button and sleep for another 15 minutes. But, if God knew at t_0 that Smith would choose to hit the snooze button, could Smith choose to do otherwise? Those who claim that divine foreknowledge and human freedom are incompatible claim that Smith could not do otherwise. For if Smith did something other than what God knew he would do, he would be changing a fact about the past, namely the fact that at t_0 God's knew that Smith would hit the snooze button on his alarm at t_1 . But we cannot change the past, and God's knowledge cannot be proven wrong as it would be if Smith did not hit the button at t_1 . The problem that has arisen is known as the freedom/foreknowledge dilemma; either God has foreknowledge of what we will do and thus we are not free, or we are free, but God is incapable of knowing what I will do in the future (and hence is not omniscient). In a chapter from his book, *Philosophy of Religion: An Introduction* William Rowe offers a solution to this problem. In what follows I shall first clarify the foreknowledge dilemma, and then explain and criticize Rowe's solution to it.

There are many competing notions regarding what freedom is; the concept of Freedom must be thoroughly understood for the freedom/foreknowledge dilemma to be assimilated. Freedom is often defined as doing what one desires to do. That being the case, a man is free if and only if the action he is partaking in is what he really desires to do. So, a child who wants to eat cake, but is forced to eat vegetables by his parents does not freely choose to eat vegetables. He eats the vegetables out of necessity, or coercion. Though popular, this notion of freedom is mistaken; the inadequacies of this definition were exposed by John Locke in his famous work, *An Essay Concerning Human Understanding*. Locke tells a story of two men who were brought into a room while they were sound asleep; after the men were placed in the room, the only exit door room was dead bolted from the outside. Thus, both men in the room are necessarily there; there is no way for them to leave. Suppose that one of the men awoke and discovered that the room was filled with friendly people. He decided that he would like to converse with these friendly individuals. This man ($M1$) wanted to stay in the room; the conversations were so captivating that he never thought of leaving. Now, imagine that the other man ($M2$) awoke at a somewhat later time. The lively conversations between $M1$ and the other members in the room immediately caught his attention. He decided to walk over to the group in order to hear what they were speaking about. $M2$ found that the group was conversing about political issues; having no interest in such matters, the conversations seemed dry and boring to $M2$. After finding what the conversations were about $M2$ was immediately overcome with an intense desire to leave the room; $M2$ soon found out that the only exit was locked, thus he was forced to stay in the room

and listen to the others carry on about political ideologies and public policies. What should we think about the predicament of the men? Both of the men are in the room necessarily; they cannot leave because the door is locked. Should we say that *M1* is free because he wants to be in the room and *M2* is not free because he is not doing something he desires to do? Locke argues that we should not; he claims that *M1* is fortunate, but not free. Both men stay in the room out of necessity, *M1* happens to be lucky that he does not want to leave. If he were to become bored with the conversation and desired to leave, then he would be in the same predicament as *M2*. It seems as though freedom consists in something more than doing what one wants to do. Locke argues that freedom is the power to do otherwise. This notion of freedom is much less problematic than the first. If one accepts the Lockean definition, then both *M1* and *M2* are equally unavoidable. Hence, neither of the men have the option to leave the room, thus they do not freely stay in the room. Locke's definition is generally believed to be less problematic than the aforementioned alternative. Though the definition itself causes fewer irregularities, it leads directly to the freedom/foreknowledge dilemma.

The dilemma is best understood when arranged in an argument form, then examined premise by premise.

1. An omniscient God knows everything that we will do before we are born.
 2. If God knows what we will do, it is never in our power to do otherwise.
 3. If it is not in our power to do otherwise, then there is no human freedom.
-
4. There is no human freedom

Premise one simply states the consequences of ascribing the property of omniscience to God; if God is omniscient, then he knows at time $t0$ that event X will occur at a later point in time. The second premise is crucial for the argument. If God is infallible and he happened to know at $t0$ that Smith would hit the snooze button on his alarm clock at $t1$, then Smith could not have chosen to get up on time. To do so would prove God's knowledge to be mistaken. An explanation of the significance of this point is needed. Imagine that at time $t2$, Smith was rushing out the door so that he could arrive to work on time. While Smith was scrambling out the door, he may have wished that he had not pressed the snooze button; nevertheless, all Smith can do is wish. There is nothing that he can do at $t2$ to change the actions he partook in at $t1$. At $t2$, it is a past fact that Smith pressed the snooze button on his alarm at $t1$. Past facts are unalterable; we may wish that a given event would not have taken place but at the later time we cannot change the fact that the event occurred. The principle behind our inability to alter facts relating to the past is known as the fixity of the past. If God knew at $t0$ that Smith would press the button on his alarm clock at $t1$, then at $t1$ it is a past fact that God knew that Smith would press the button at $t1$. Smith cannot alter a fact about the past, namely, what God knew; therefore, Smith cannot refrain from pressing the snooze button. Premise three of the argument against freedom is simply a logical consequence of the doctrine; if one cannot change God's past knowledge, then it is impossible to do otherwise. If a man cannot do otherwise, then he is not free.

This argument against human freedom is very powerful. To save freedom, many philosophers and theologians have offered solutions to the problem. Some have argued that freedom is not adequately defined as the ability to do otherwise; if alternate definitions are adopted, the dilemma may be avoided. When freedom is defined as doing what you want to do,

it does not matter if God foresaw Smith pressing the button at $t1$. As long as Smith wanted to press the button at $t1$, his action was done freely; it is of no consequence that he could not refrain from pressing it. Other philosophers simply proclaim that there is no human freedom. If we are not free, then there is no dilemma to worry about. Another solution put forth denies that God possesses foreknowledge of events; this of course eliminates the dilemma. The previous two solutions are considered radical because they involve the denial of either freedom or foreknowledge. These types of solution avoid the freedom/foreknowledge dilemma, but they do so at great costs. It is generally agreed that solutions of this variety ought to be avoided. The final type of solution put forth involves a rejection of premise two above: 2. If God knows what we will do; it is never in our power to do otherwise. Those who reject premise two claim that divine foreknowledge does not imply that it is never in our power to do otherwise. This type of solution is offered by John Rowe in his essay *Predestination, Divine Foreknowledge and Human Freedom*.

Rowe attacks the second premise of the argument against freedom by claiming that the reasoning behind it is mistaken. Premise two rests on the principle of the fixity of the past; the principle states that it is never in anyone's power to alter the past. If one can show that the past is not always fixed, then many of the assumptions that rely on the fixity principle will be destroyed. Rowe distinguishes between two types of facts about the past; he claims that there are (1) facts simply about the past and (2) facts not simply about the past. Consider the following two facts:

F1: In the year 1919, the United States began to prohibit its citizens from consuming alcohol.

F2: In the year 1919, the United States began a period of prohibition that would last for 14 years

Relative to the year 2005, *F1* and *F2* are both simply about the past. There is nothing that a person living in the year 2005 could do to negate *F1* or *F2*. An examination of a year closer to the one mentioned in the facts will yield a much different conclusion. In the year 1925, *F1* was a fact simply about the past. No one alive in the year 1925 could change the fact that in the year 1919, the United States began a campaign that prohibited its citizens from consuming alcohol. Individuals living in 1925 could wish that they had done more to stop the prohibition movement from spreading, but they could not have done anything to change the fact that *F1* occurred.

Though *F1* may have been impossible to alter in 1925, a fact such as *F2* could have been modified in that very same year. In 1925, *F2* was not a fact simply about the past. This is because *F2* implies certain facts about the future, such as "The United States will be in a state of prohibition until the year 1933 (*F3*)."
Relative to 1925, *F3* does not pertain to the past at all; it is a fact about the future. It seems as though there were things that citizens of the year 1925 could have done to prevent *F3* from becoming a fact. Perhaps the citizens could have initiated some kind of a large scale resistance effort that would have led to an overturning of the prohibition amendment in 10 years instead of 14. A successful effort of this kind would deny the claim of *F3*, thus removing its classification as a fact. If the hypothetical resistance effort would have taken place, then *F2* would no longer be a fact about the year 1919. This is because *F2* implies *F3*, "The United States will be in a state of prohibition until the year 1933" which would no

longer be a fact. Thus it seems that not all facts regarding the past are set in stone; facts simply about the past are unalterable, but it is possible to change facts not simply about the past.

Relative to certain points of time, a fact such as, "Smith will eat dinner at 6:00" may be a fact simply about the past; facts of this type are often used to initiate the freedom/foreknowledge dilemma. If an omniscient God exists, then he would know at a time prior to Smith's birth that Smith would eat dinner at 6:00 on day *X*. It is likely that Smith himself would want to believe that it was in his power to eat dinner at a different time if he desired to do so. But, if he were capable of doing this, it would seem as though he would be capable of altering a past fact that God knew, specifically "Smith will eat dinner at 6:00 on day *X*." Rowe would argue that Smith's freedom is salvaged by a closer examination of the events at hand. At 5:30 the fact that God knew Smith would eat dinner at 6:00 is not a fact simply about the past; it implies the future fact that at 6:00 Smith is eating dinner. Since the time of the dinner is not a fact simply about the past, Rowe claims that it was in Smith's power to alter it at 5:30. Smith could chose to accept a dinner invitation from Jones at 5:30, instead of waiting until 6:00 to eat. This is because the fact that God "knows" regarding Smiths dinner time is a fact pertaining to the future, and any facts relating to the future may be changed. So, Smith could choose to eat at 5:30. If he did so, it would not be a fact that God knew Smith would eat dinner at 6:00. Instead, it would have been a fact that God knew Smith would eat dinner at 5:30. Thus, Rowe and his followers conclude that some facts of divine origin may be altered. If this is possible, then one has the ability to do otherwise. This is said to rescue humans from a deterministic fate.

Though Rowe's attempt at solving the freedom/foreknowledge dilemma is applaudable, its success can be questioned. Note first that even facts that are not simply about the past contain a fact that *is* simply about the past (*P*), as well as a fact about the future (*Q*). Thus, in reference to *F2* in the year 1925, *P* would be, "In 1919, the United States began a period of prohibition." The future fact *Q* is the statement, "The period of prohibition would last for last for 14 years." Rowe implies that the people living in 1925 could do certain things to change the fact that *Q* because it has not yet occurred; he argues that this ability to do otherwise saves human freedom. But, this is an incorrect notion. To see why note that if God knew in 1919 that (*Q*) the period of prohibition would last for 14 years, then in 1919 it was a fact about the future that *Q*. Thus if society could have done something in 1925 that would have brought it about that prohibition ended in 1930 instead of 1933, then not only would society have changed a fact about the past, i.e., that in 1919 God knew that *Q*, but it would also have brought about a change in the future. That is, what was a fact about the future in 1919, namely, *Q*, would no longer be a fact about the future in 1925. But that is impossible. We cannot change the future; we can, if we are free, only bring it about. Thus, if in the past i.e., in 1919, it was a fact about the future that prohibition would last for 14 years, then it must remain so.

The difficulty might be put in the form of a dilemma. Either we can change what God knew in the past or we cannot. If we *cannot* change what God knew in the past, e.g., at *t0*, that Smith will eat dinner at 6:00, then Rowe's solution fails. If we can change what God knew in the past, i.e., we could bring it about that God knew that Smith will eat dinner at 5:30, that would imply that we can also change the future. However, that is impossible. The future will be what it will be and we cannot change it. However, if we cannot change the future then we cannot change what God knew in the past (since that implies that we could change the future), and once again Rowe's solution fails. For whether we can change what God knew in the past or cannot, we cannot change the future and thus God's past knowledge is incompatible with human freedom. In other words, Rowe's solution to the foreknowledge dilemma implies that there are

certain facts about what God knew in the past that can change, and since that is impossible, his solution is inadequate. Whether or not some other solution may work is a question that whose answer must wait for another occasion.

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Images of Femininity in Reality TV Shows: An Analysis of the Creation and Reproduction of Femininity

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INTRODUCTION

Reality television dates back to the 1940s with the show *Candid Camera* and various dating game shows (Murray 1900). This genre of television soared in 2000 with the popularity of shows such as, *Survivor* and *Big Brother*. Susan Murray states, “the genre’s overarching characteristic is its claim to the ‘real’...its relentless obsession with the intimate, and its tendency to focus on ordinary people in extraordinary circumstances...have helped make reality television one of the most talked about, reviled, and popular genres on television (1900). The term “reality” suggests to its viewers that these shows display what life is really like or at least what it should be like. Serving as an agent of socialization, reality television shows, particularly makeover shows, have the power to persuade and to shape one’s mind, body, and emotions.

In this study, I examine the social construction of femininity through the media. Women learn at the interactional and institutional level how to be, feel, act and think in culturally-approved feminine ways (Milkie 841). Theorists argue that gender is something that is not biological, but gender is created, maintained and reinforced in everyday interaction (West and Zimmerman, Lorber, Kimmel, and Henslin), and that media contain messages that are part of these processes. My aim is to uncover the messages contained in reality television shows and how these messages serve as guidelines and criteria for adult women femininity. The shows carry a message that expects and demands from women that they conform to the images of femininity. I am not only interested in identifying the ways in which one internalizes messages of femininity and conforms to feminine images, but I am also interested how there is some resistance to these images. In the following sections I present my review of the literature, discuss the methods and the limitations of this study, and present the overall implications of this study and ideas for future research involving the social construction of femininity.

SOCIALIZATION AND THE SOCIAL CONSTRUCTION OF GENDER

Through the socialization process children and adults learn gender roles. More specifically, girls learn how to be girls through culture and interaction in different socializing institutions (West and Zimmerman, Lorber, Kimmel, and Henslin). Because socialization is a lifelong process, one never stops learning and “doing” their gender (West and Zimmerman, Lorber, and Kimmel). Barrie Thorne writes that gender is an “active on-going process” through which children and adults are constantly constructing gender (4). Gender scholars agree that gender is an on-going process that does not simply begin or end at adolescence, but “doing gender” begins very early in life and continues throughout the life course.

More specifically, as Lorber (22) states, “Individuals are born sexed but not gendered, and they have to be taught to be masculine or feminine and thus as West and Zimmerman suggest, people must enact their genders in their everyday. Lorber states that one may “do gender” and not even realize that they are engaged in that process. Also, gender is created, maintained and affirmed through the socialization process. It is also important to note that

Lorber's idea that gender is a social institution, much like any other social institution, e.g. the economy or the family. That is, there are certain expectations and structural arrangements that guide everyday behavior and the way individuals interact with one another. Intrinsic to these interactional processes are patterns of differentiation that produce gender similarities and differences that themselves become strongly normative and are institutionally reinforced. Clearly, the media are one set of institutional practices involved in these reinforcing processes. In the following sections I briefly discuss the methods and limitations of this study, my findings and present the overall implications of this study and ideas for future research involving the social construction of gender.

METHODS

The data were collected from three different reality shows: *A Makeover Story*, *Ambush Makeover* and *10 Years Younger*. I watched five episodes of each show for a total of fifteen shows. Each episode was recorded and viewed twice. Using content analysis, I looked for patterns in each episode. I recorded the ways in which all the individuals involved in the makeover process interacted verbally (e.g., comments) and nonverbally (e.g., gestures, movements, facial expressions). I then looked for patterns in their comments and their body language.

One of the limitations of my study is that it lacks racial and ethnic diversity other than the construction of white femininity. The total number of the individuals receiving the makeovers is 25, the racial/ethnic and sex breakdown of the participants are as follows: 21 Caucasians (84%), 23 women (92%) and 2 males (8%). Additionally, the shows I watched consisted primarily of middle/working class white women.¹ Part of the drama of these shows is to take women to stores, salons, and treatment centers (e.g., dermatology) that middle/working class people normally would not frequent. In the next section I will discuss the findings that emerged from the content analysis.

SOCIALLY CONSTRUCTED IMAGES OF FEMININITY

Three dominant themes emerge from the data: feminized beauty, compulsory heterosexuality and transition to womanhood. I examine how these themes illustrate the accountability and social construction of gender in which the feminine transformation embedded in these shows is expressed as a dramatic change and as the revealing of a person's self. Through these shows, a woman is not only radically changed and more feminine but she is "perfect." Prior to receiving a makeover, a woman is presented as not having the right lifestyle, which includes beauty maintenance (e.g., the right clothes, hairstyle, accessories, and makeup), and she may lack an established romantic, heterosexual relation, but after the makeover she now meets the standards of femininity, a culturally approved goal. In the following section, I examine each theme and show how they are linked to the social construction of femininity. First, I will discuss how a docile body is necessary to actively engage in the makeover process. That is, by agreeing to participate in makeover shows women choose to partake in a process in which they agree to be "docile bodies" in the pursuit of femininity. From the moment that these women are taken to get a makeover, they are told what to do, how to do it, what to wear and how to wear it. Once

¹ The class was not explicitly revealed; however, I was able to discern their class in terms of the makeover participant's occupation.

women surrender to the process beauty is feminized, heterosexuality is emphasized and the transition to adult womanhood is facilitated.

Feminized beauty is the most common theme in every show. Feminized beauty is socially constructed and culturally determined and it can take on different meanings. That is, beauty can be internal (feeling good or happiness) and external (expressed by appearance). To illustrate the way in which beauty is related to the internal, Delilah, a twenty-six year old, single, pharmacy technician says:

I got rid of the blues. I am going to start all over. I am not going to worry about being sad anymore because I look good, I feel good and I'm just going to go with the flow. My confidence is a lot higher than the beginning of the day. I am speechless, I am so happy. I never thought I could look like this. I need this really, really bad. I am looking good, I am feeling good. This makes me feel a lot better about myself, boosts my self-esteem knowing that I can start over from here and hopefully keep up the look (*Ambush Makeover*).

In these shows, achieving feminized beauty is a powerful force making one feel special, good, happy and confident, in sum socially acceptable. Feminized beauty as something that is internal is evident because the majority of the comments made by the persons receiving the makeovers explicitly and implicitly states that it gave them more confidence, happiness or more self-esteem than they ever had before.

While beauty can be seen as an expression of the internal, what one puts on the body is also important. Rita Freedman states, "As a signal of gender and power, clothing is as important in defining woman's world as the body beneath it" (85). These shows set a standard for feminine fashion that primarily consists of skirts, low cut, sleeveless revealing shirts, and high heels. With these clothes, women are able to achieve a youthful and sophisticated appearance.

These shows illuminate the idea that the media perpetuates this culturally created notion known as racialized beauty. The majority (84%) of the individuals the receiving makeover were Caucasian; therefore, these shows present a "distorted, narrow image of female beauty..." in which Caucasian beauty is the ideal beauty that every woman should strive to achieve and maintain (Milkie 839).² With only 4 (16%) women that were not Caucasian it was difficult to determine whether or not women of different races and ethnicities identify with the ways in which these shows construct and impose an image of beauty. Rita Freedman argues that feminine beauty "in our culture is built upon a Caucasian model" (26). Moreover, Freedman states, "To be womanly is to be beautiful, and conversely, to be unattractive is to be unwomanly" (2). I now examine how being womanly is also to be heterosexual.

Through the construction of femininity, these shows reflect the idea of compulsory heterosexuality in which femininity is linked with heterosexual relations. Adrienne Rich argues that "...heterosexuality is presumed the 'sexual preference' of 'most women,' either implicitly or explicitly" (218). In the shows, heterosexuality is implicitly and explicitly assumed either the woman has no man because she wears no makeup and does not do her hair or she desperately needs a makeover so that she can get a man. In this section I will show how heterosexuality is assumed to be the sexual preference for all women and how women's perceived "sexiness" is heterosexualized.

² External visible cues were the basis for determining the race/ethnicity of the makeover participants.

The style agent in *Ambush Makeover* spots a young woman named Roni and decides that she will “ambush” her for a much needed makeover. The show’s mission statement is, “From can’t get a date to boy bait.” To illustrate this, the style agent says:

Do you have a boyfriend? Maybe there is a reason why because you are dressed like this and you look like this, no makeup, no anything...when was the last time you dated someone? I am going to hook you up and I am going to take you on something called speed dating, a man and a makeover, that’s hot, are your ready? I am turning her into a dating diva...I am giving her what every women dreams of, a man and a makeover (*Ambush Makeover*).

There was no evidence of any other option for Roni. From the very beginning, heterosexuality was assumed to be her sexual preference. Moreover, doing femininity successfully requires one to have a man. If she does not have a man then something is wrong with her. Therefore, she is held accountable for seeking out a heterosexual relationship.

In these shows, heterosexuality is viewed to be a requirement for feminine fulfillment; therefore, a woman’s sexual orientation is “naturally” heterosexual. Moreover, the reinforcement of “heterosexualized femininity” sustains male dominance in society; therefore, subordinating women to men (Seidman). Steven Seidman states, “The system of heterosexuality perpetuates male dominance by centering women’s lives on the interests, values, and the needs of men” (247).

Oftentimes, beauty and sexuality were used together when evaluating and describing the makeover process and results. In these shows, sexuality is difficult to separate from beauty because comments explicitly and implicitly related to sex are often used to refer to one’s perceived beauty. One is labeled beautiful and sexy when she displays her body (e.g., cleavage, shorter skirts, dresses), wears tighter fitting clothes (e.g., jeans, shirts) and high heels, has the right haircut, haircolor and makeup that complements her skin tone. To illustrate, a friend and mother in *A Makeover Story* comment:

She looked so beautiful, she was sexy and I think she needed that, her hair is gorgeous, her shoes match perfectly. Well, I wondered to myself as a mother, how could beautiful be more beautiful, she looks awesome.

Some of the women felt sexy in skirts and heels and their newly colored hair (many times blonde). Their look prior to the makeover was not seen as sexy, but wearing more revealing clothing, have their hair and makeup done, they are now “sexual” women.

Reality makeover shows write sexual scripts for which women are held accountable for following (Seidman). During the makeover process, beauty is feminized, and heterosexuality is imposed and they all work in concert as part of the transition to womanhood.

Transition to womanhood means to engage in certain makeover activities that are normatively designed to transform non-feminine looking women into feminine looking women. It is assumed that before a woman gets a makeover she is not yet a “complete woman.” That is, she lacks something or many things that are “womanly.” For instance, a style agent says as she locates and approaches her “target”:

“Tomboy alert! The visor... the ponytail, the top, we need to turn that girl into a

woman... You look like a tomboy with this [hat] on-can I take this off? Look at this, it's a mess...Roni's tomboy style isn't doing her any justice... She looks like a tomboy and that's not right. [After the makeover] I took Roni from tomboy to terrific! (*Ambush Makeover*)

The style agent excitedly declares her plan for the makeover. She says:

I am going to take you, make you over and give you a great new hair cut...give you a great hairstyle, great color, make you blonde all over... I've got five hours to make Roni a femme fatale, off to the salon!

Roni's friends and family recognize this transition from tomboy to real woman. Her friend states: "...She looks like a woman finally and not a tomboy...She looks like a woman, she looks beautiful."

Almost everyone viewed this transition to womanhood as a dramatic change, in which the women feel as if they do not know themselves and they do not recognize themselves. For example, one woman says:

When I saw it I did not believe it was me. I had to walk away and come back. I was just so shocked and so elated that I looked like this...I don't even recognize myself. I was really excited as soon as it sunk in (*Ambush Makeover*).

The images that result from this transition are projected onto the audience, thus promoting a particular feminine ideal. Feminized beauty and compulsory heterosexuality are all a part of the world of womanhood, permitted by a woman's agreement to be a docile body during the makeover process. So, while making the transition to womanhood one simultaneously becomes more beautiful and therefore more feminine.

DISCUSSION AND CONCLUSION

The media, particularly television, is a powerful socializing agent in which girls and women receive and interpret gender messages. Gender socialization, or learning appropriate gender roles and identities, takes place throughout the life course and is constantly being created, reproduced and negotiated through interaction and in social institutions. This study shows that women repeatedly hear that one must look feminine and act in feminine ways in order to be considered a "complete woman."

The findings suggest that reality television makeover shows project a rather narrow image of femininity and that women are pressured to conform to such image. The content analysis suggests that women receive messages of beauty, compulsory heterosexuality and womanhood. These messages, although discussed as separate themes, work together and reinforce one another to produce a singular idea of femininity in which images of women in society are clearly defined and regimented. Therefore, the themes generated from viewing reality television makeover shows are negative towards women and only work to produce, reproduce and maintain gender differences; hence, gender inequality. However, because women choose to be a part of these shows, future research should examine why women volunteer to become a part of this process. Furthermore, in makeover shows, women agree to be docile bodies, but women

also agree to be docile bodies in many settings, in their everyday lives. That is to say, women are held to the standards of femininity (beauty norms, heterosexuality and womanhood) in which they are judged, corrected, and evaluated and expected to achieve and maintain feminine images.

The findings show that beauty is a significant in the social construction of femininity. One of the most troubling conclusions that can be drawn from this study is that it is becoming more apparent in the media that beauty is perceived to be a woman's most important asset. This study also shows that society defines beauty in such a way that women who may not identify with this socially constructed image are excluded. The makeover participants in the fifteen shows viewed were predominantly white women. It appears that beauty is racialized in which "white beauty" is perceived to be the standard. It is apparent that more research needs to look at the racialization of beauty in our culture and how women of different races perceive and react to images of femininity throughout the life course.

One other significant implication of this research is that gender is accomplished (West and Zimmerman). Women are not naturally feminine, but women must learn to be feminine and reality television makeover shows supply the learning tools for which to achieve that task. This study illustrates the process by which femininity is constructed in the everyday lives of women; one way is through watching reality television makeover shows. There are techniques and strategies designed, implemented and then communicated to members of society (participants, an audience) which maintains the idea of femininity as being the same for all women and an image that is opposite of what constitutes masculinity. In makeover shows, women learn how to do beauty and maintain it; how to be a woman, how to feel and move in feminine ways; and that to be feminine is to be heterosexual. This is not to say that only women receive gender messages, but men learn how to be masculine as well. Therefore, future research on the social construction of gender or gender socialization in the media should address how images of masculinity are created and shaped at the institutional and interactional levels.

This research suggests that television sends powerful gender messages and images that shape how women feel, look and act. The growing strength of the media as a vehicle for promoting a singular femininity is not to be ignored. This analysis shows the importance of uncovering these images that so subtly control women's lives and to educate young girls and women about alternatives to the status quo. One way this can be accomplished is through teaching at the grade school level and at the college level. Massoni states, "Feminist instructors have the opportunity to teach media literacy in their classrooms, discussing (and practicing) decoding strategies and/or sharing information about alternative media formats" (63). In addition, this research sheds light on importance of challenging and questioning the images of femininity as portrayed in the media because as long as society continues to construct, maintain and reproduce appropriate images of femininity women will not achieve full equality.

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Nanosized Silver Crystals Encapsulated in Graphite

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Abstract

Several films have been grown at the University of Michigan-Flint by using an RF generator to evaporate nanosized silver crystals encapsulated in graphite onto quartz and sapphire substrates. An x-ray diffraction spectrum was measured for the film samples and indicates the presence of silver nanocrystals. An absorption spectrum was also measured and confirmed these results. The Van Der Pauw method was used to measure the resistivity of the material as a function of temperature. The results show that the conductivity of the film does not follow the same pattern as that of silver or graphite alone.

Introduction

Polycrystalline materials that are artificially synthesized and whose grain sizes are of the order of several to dozens of nanometers long are known as nanostructured materials (n-materials). At the present time there is little known about n-materials with regards to their character and mechanism of the electron transport property.¹

It is known, however, that when the crystal size is reduced in a material, it substantially affects several physical properties including structural, magnetic, optical, thermal and dielectric to name a few.² Materials having an average crystallographic domain size in the range of 1-50nm have shown to be significantly superior to that of the larger-grained variety exhibiting, for example, higher electrical resistivity, lower thermal conductivity, larger specific heat, and a higher thermal expansion coefficient in comparison.²

This research focuses on nanocrystalline silver encapsulated in graphite, a nanostructured material with an average crystal size of around 14 nm that was grown at the University of Michigan-Flint. To date there does not appear to be any studies on this material and has shown to possess some interesting properties that have been illuminated, and others that warrant further investigation.²

Experimental Considerations

An Arc-Discharge Chamber was used to make soot that is known to contain silver crystals encapsulated in graphite.⁴ Once this soot had been collected it was then washed, so as to remove most of the fullerenes present in the sample, and allowed to dry. A portion of this material was then used in an RF-generator to grow several samples.

Several samples were grown on sapphire or quartz substrates at an RF-generator power level of 40 W for 140 seconds and 60 W for 160 seconds. The substrate was approximately 3-4 cm away from the evaporating material. Samples grown at 40 W tend to be yellow and nonconductive and are represented here by sample (a). Samples grown at 60 W were grayish and conductive and are represented by sample (b)

It has been shown that an x-ray diffraction spectrum can provide valuable information about the lattice structure as well as the size of the particles in a material.⁶ This method was therefore employed on samples a and b using a Rigaku X-ray to verify the presence of nanosized silver crystals as well as their average length.

In order to support the findings of the x-ray diffraction spectra, the absorption spectrum was measured using a Shimadzu UV-265 Spectrometer. The absorption spectrum is yet another useful tool that is known to illuminate both the presence and size of nanocrystals in an unknown n-material.

It was also desirable to examine the mechanism of the electron transport property of this material. This was accomplished using a low temperature cryogenic system and the Van Der Pauw method to measure the resistivity of conductive samples as a function of temperature.

Experimental Results

Figure (1) shows the x-ray spectrum of the samples (a) (bottom) and (b) (top). The large spike at around 39° is an indication that there are silver crystals present the sizes of which were calculated using the Scherrer method. This technique was developed as a means to estimate the particle size of small crystals based on the width of their diffraction curves using the following relation:⁵

$$t_s = \frac{0.9\lambda}{B \cos \theta_B}$$

In which t_s is the particle size, λ is the wavelength of the x-rays, B is the angular width in terms of 2θ , and θ_B is the angle of maximum intensity.

Using the Scherrer method it was found that the average crystal size was around 14 nm however these results do not include broadening from the equipment. It was indicated by TEM that the soot used to grow samples (a) and (b) contained nanosized silver crystals encapsulated in graphite to about 30 nm.⁴ An x-ray diffraction spectra was measured for the soot before evaporation and showed that the average size silver nanocrystal was the same when compared to that of the nanocrystals in the samples. It is quite interesting that RF-evaporation did not change the nanocrystal size. This discrepancy in size can be related to the equipment broadening which was not included in the Scherrer formula.

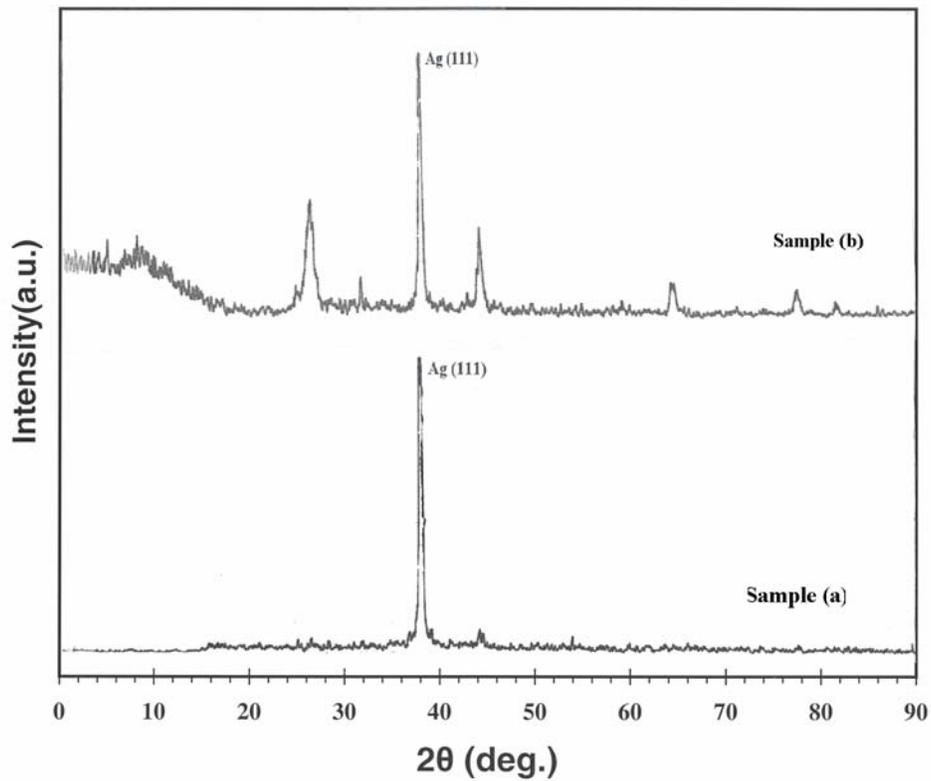


Figure 1: X-ray diffraction spectra of the samples (a) grown on a sapphire substrate and (b) grown on quartz. Sample (a) was not conductive however, it is obvious that both spectra are dominated by the reflection of the (111) plane a feature that is associated with Ag. The additional peak below 30 degrees in sample (b) is not due to silver but a possible impurity.

The absorption spectrum of sample (a) was measured because it provides information about the size of these nanocrystals. The absorption spectrum of sample (a) is shown in Figure 2 and illustrates the intensity of transmittance as a function of wavelength. The peak of intensity at 380 nm wavelength is a typical sign of the presence of silver crystals; however, the origin of the peak at 520 nm is not yet known and requires further investigation.

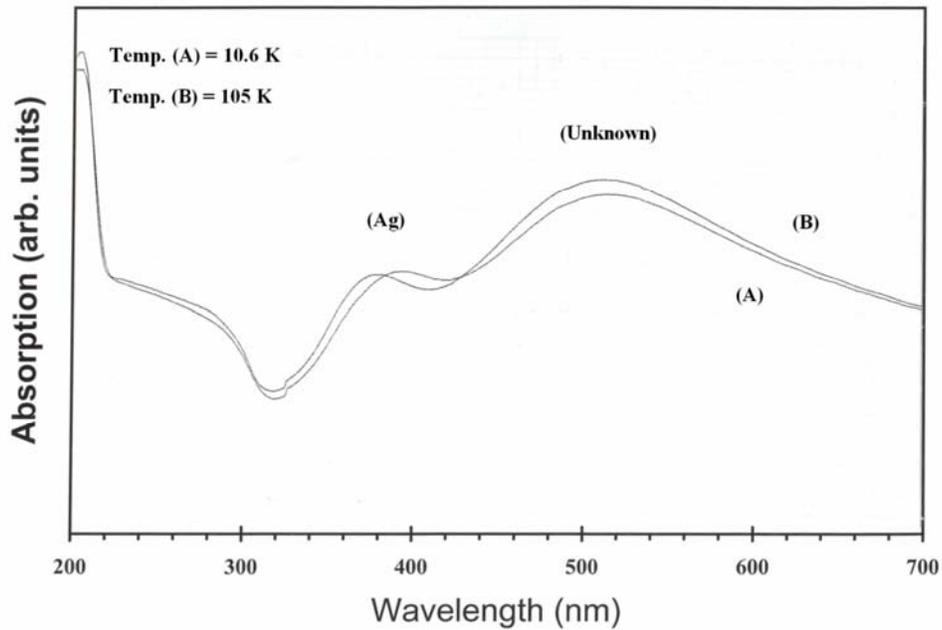


Figure 2: Absorption spectra of sample (a) taken at two different temperatures. It is shown that the peak below 400 nm due to nanosized silver clusters is shifted to a higher energy as the temperature is decreased but the unknown peak above 500nm is temperature independent.

The resistivity of the n-material is yet another interesting property that was examined during the course of this research. Figure (3) shows how the resistivity changes with temperature for graphite², nanosized silver crystals³, and sample (b). It is observed that the resistivity for graphite reduces steadily as the temperature decreases while that of the nanosized silver crystals reduces and then levels off. The resistivity of sample (b), however, actually increases as the temperature gets lower. This is interesting as it is known that the film is made from nanosized silver crystals and graphite yet does not follow the temperature dependence of either alone. In addition, further analysis indicates that it is not possible to fit the results of the film with any linear combination of nanosized silver crystals and graphite.

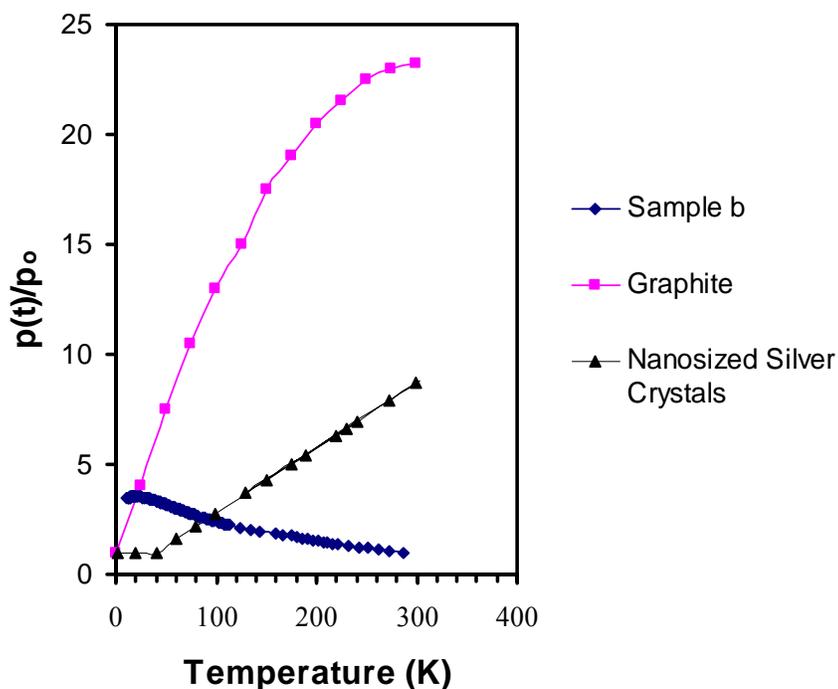


Figure 3: The resistivity as a function of temperature for graphite, nanosized silver crystals, and sample (b). It is shown that the resistivity reduces for graphite as the temperature decreases while the resistivity for nanosized silver crystals reduces and then levels off. The resistivity for sample (b), however, gets larger as the temperature goes down.

Conclusion

Thin films of nanosized silver crystals encapsulated in graphite were grown at the University of Michigan-Flint. These nanocrystals, having an average size of 14 nm, were confirmed by x-ray. These findings were supported further with absorption measurements, which not only showed the presence of silver, but also an additional peak which may or may not be related to graphite. In addition, the temperature dependent resistivity of these films does not follow either nanosized silver crystals or graphite alone nor do they appear to represent a combination of the two. It is not yet known the ratio of silver to graphite that is present but with further testing this could offer an explanation to this anomaly.

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The Depiction of Women as Praying Mantis in Male Surrealist Art: An Examination of the Male Fear of Castration, Impotence and Sexual Ineptness

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Surrealism was heavily influenced by Dadaism and the writings of Freud. Dada, created in Zurich in 1916, was a way for artists and intellectuals to escape the horrors of World War I. The events produced at the Cabaret Voltaire were a variety show of sorts—with nonsense poetry, noise music, masks, and performance art—that was a reaction to and against the so-called killing machine culture of the time. The key element of Dada was the emphasis on the freedom of individuals to find their own means of expression. The artists introduced new materials and new ways of depicting the rapid changes of modern life in the 1910s and early 1920s. Although considered separate movements in art, the line between Dadaism and Surrealism initially was somewhat blurred. Many of the same artists who were involved in Dadaism were also involved in Surrealism and the emphasis on individual freedom of expression continued. However, from the mid-1920s Surrealism pursued a different strategy. “Surrealists saw in liberation from restraint an assurance of freedom to act in defiance of the values underlying accepted restraints, and under impetus by inherited means” (Matthews 116). The Surrealists still assaulted all fondly held political, social and artistic conventions, but did so as a definitely constituted movement, with a recognized and charismatic leader, Andre Breton. While the Dadaists were a loose-knit group of individual artists creating separate, but connected works of art, the Surrealists were a collective movement with a definite objective and agenda for their art. Their position and objectives were declared in Andre Breton’s *Surrealist Manifesto*, published in October, 1924, and soon after, in their publication, *La Revolution Surrealiste*, in December, 1924. Influences on the Surrealists include: “automatism, modern technology, anarchism, oriental philosophy, ritual, Freudian psychoanalysis, chance, Jungian psychoanalysis, eroticism, [and] Marxist dialects” (Gale 7). In the *Surrealist Manifesto*, Breton stressed the importance of dreams and the rights of the imagination. Breton posed the question, “ ‘Do dreams explicitly harbor the causes of our preferences and our desires?’ ” (Durozoi 67).

The writings of Freud³ were a significant influence on the Surrealists and fueled the preoccupation with subconscious dream logic and theories relating to sexuality and sexual repression. Freud asserted that socially unacceptable thoughts and desires were in the subconscious mind; in some people, they may be expressed through irrational behavior, but in most or all people, they were always expressed in dreams. “The Freudian basis of Surrealism ensured that the exposure of repressed sexuality was equated with a liberation from rationalism and the restrictions of convention” (Gale 236). This liberation from rationalism and convention encouraged the Surrealists to explore their fantasies and fears—especially those concerning women and sex. The image of woman was reduced to an object, most notably the torso and/or sexual organs, as depicted in *The Rape*, by Rene Magritte, 1934 (Fig. 1). The head, representing identity and intelligence, as well as the arms and legs, representing autonomy, were usually eliminated. If not eliminated, then they were manipulated and mangled—rendering the woman a

³ Most notably from his book, *The Interpretation of Dreams*, published in 1900 and later translated into German, English and French by the early 1920s.

helpless victim under complete control of the male artist and male viewer. By disfiguring and deforming the female figure,⁴ the woman's sexual power was stripped from her, thereby alleviating the male's sexual fears and threats to his virility. Author John Loughery characterizes such imagery as "an energetic, quasi-pornographic projection of a socially validated adolescent need to degrade" (Loughery 296). While such imagery may have been liberating for the male artists, it was and is, without a doubt, demeaning to women.



Fig. 1



Fig. 2

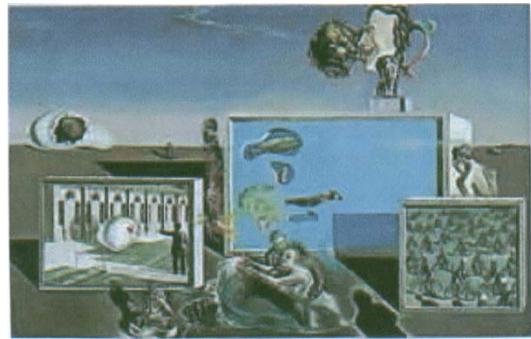


Fig. 3

The iconographic image of the praying mantis is featured in a number of Surrealistic works, including those by Salvador Dali, Andre Masson, Alberto Giacometti, and Felix Labisse. The fascination and, indeed, preoccupation with the imagery of the praying mantis as sexual predator led to the male Surrealist portrayal of women as such. It was believed that the female praying mantis devoured the male during or after coitus,⁵ as shown in "La Mante Religieuse" (Fig. 2). "Sometimes she decapitates the male at its start, his body performing his duty automatically, like a sex-machine" (Markus 33). The notion of such a violent and cannibalistic act heightened the fear of castration, impotence, and sexual ineptness. "The particular interest in the mantis was largely due to its exceptionally anthropomorphic form and to the imaginative observations of J. H. Fabre, who documented this insect's habits with as much poetry as science" (Pressly 600). The praying mantis was named for the distinctive posture it takes while waiting for its prey: front legs held together at its chest. Interestingly, the Surrealists also referred to it (and women) as "preying" mantes. The influence of Freud's writings on repressed sexuality and the male's inherent fear of castration and death as a sexual being led the Surrealists to adopt the praying mantis iconography. "The female was depicted as a bestial *femme fatale*, alluring, detached, and deadly, who destroyed her lover in the very act of mating" (615). As such, the praying mantis represents the female as sexual predator and, thus, allows the male to blame women for his sexual fears and ineptness.

The fascination with praying mantes led several Surrealist artists, including Andre Breton and Paul Eluard, to cultivate them in their homes. They "studied them closely, and invited others to observe the spectacle of their macabre sexual rites" (Markus 33-39). According to author Ruth Markus, Eluard considered this act as a reflection the ideal sexual relationship: the female takes advantage of the male's diminished power during coitus; with her "momentary

⁴ More often than not, the *nude* female figure.

⁵ It has since been documented that the cannibalistic act is performed more often than not in extreme circumstances of hunger and/or captivity (Pressly 600).

superiority,” she kills the male. Ironically, the mantis is also associated with teeth in many cultures—as both a cure for a toothache and a symbol of nutrition and digestion. “Because the mantis eats her sex-partner, the teeth have come to symbolize both cannibalism and castration. Represented by a mouth filled with threatening fangs or with a toothed vagina designed to castrate any predator, she becomes Surrealism’s other main trope, the vagina dentata” (Markus 33-39). The man who fears woman, and sees her as the vagina dentata, is considered to not have reached maturity, as he still sees himself as the vulnerable phallus, as indicated in Freud’s teachings. It was presumed that for such a man, the only protection from the vagina dentata was masturbation, as it provides an escape from sexual intercourse and protects him from possible castration.

Like most male Surrealists, Salvador Dali suffered greatly from the paranoia of castration, as well as the death of his sexual power at the hands of woman’s sexuality. Dali depicts women as praying mantises and uses the imagery of masturbation to escape from them. This iconography is depicted in many of his paintings, including his 1929 work, *Illuminated Pleasures* (Fig. 3). The theme of Dali’s preoccupation with himself—his sexual fears, psychological problems, and anxiety, is demonstrated in *Illuminated Pleasures*. In the blue central picture box, there are two insects, a grasshopper and a praying mantis, above a horizontal self-portrait. Dali utilizes the image of the praying mantis as a symbolic reference to his fear of being devoured. Beside the central box is a nude male, seen from behind, masturbating—only the torso is visible, as the lower half of his body is obscured by another picture box. The idea of being devoured during the sex act suggests there is safety in masturbation, that he is hiding his face symbolizes the fear of castration (Schneede 92). According to Dali, the biomorphic shapes on the heads of the bicycle riders are “the sugar almonds of the Playa Confitera that provoke masturbation” (92).

The work of Andre Masson presents woman as praying mantis in many different forms and meanings. One of the most terrifying images of the femme fatale/praying mantis images is Masson’s 1929 painting, *Landscape with a Mantis* (Fig. 4). The praying mantis is a giant on the landscape—dwarfing a nearby pyramid. She appears with her head tossed back, seemingly snarling. Her arched back allows her vagina dentata to be fully exposed and appears waiting for its next victim.



Fig. 4

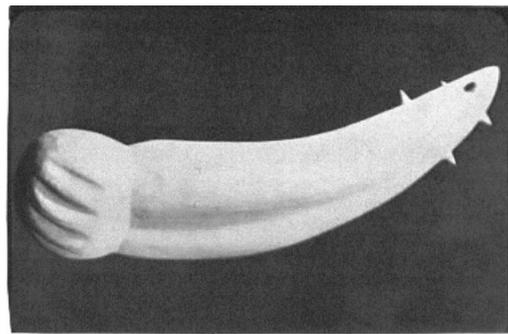


Fig. 5

Ironically, the only artist to address and possibly overcome his fears of the woman as praying mantis and vagina dentata was Alberto Giacometti. His solution for the powerful female sexuality, which apparently rendered him impotent and able to reach “satisfaction only with

prostitutes,” (Markus 33-39) was the 1931 sculpture *Disagreeable Object* (Fig. 5). Instead of resorting to images of avoiding women via masturbation, he sets out to destroy the vagina dentata. His *Disagreeable Object*, a toothed phallus, was designed to mutilate and conquer the vagina dentata, and thus allowing him to overcome his sexual inadequacies. “This disagreeable object marked a necessary stage in his path to maturity: he replaced escapism and impotence with angry assault” (33-39). This destruction of the vagina dentata—the woman’s sexual organ—leads this author to pose a question: If the vagina is destroyed and therefore unavailable for his sexual gratification, won’t Giacometti thus be forced to masturbate?

In 1932, a year after he produced the *Disagreeable Object*, Giacometti portrayed a powerful image of sexual violence in his work, *Woman with Her Throat Cut* (Fig. 6). The abstract sculpture depicts a woman as a deformed, mutilated praying mantis. She is lying on the floor, with her torso slit into two jagged parts. By mutilating a potentially fertile woman, he is able to even the score of his sexual impotence, which possibly occurred after being left sterile as the result of contracting mumps at the age of sixteen (33-39). Her long throat is slit up the middle, upon which is a “tiny head with an open mouth, as though gasping for one last breath” (Ibid). She has clearly been violently assaulted and then trampled upon. “One of the arms ends in a cylindrical weight that, according to the artist, was inspired by the nightmare of not being able to lift an arm to push an attacker away” (“Surrealism: Desire Unbound”). In an ironic twist, Giacometti depicts the symbol of male sexual fear as a conquered aggressor.



Fig. 6



Fig. 7

Because of the fascination with the image of woman as the sexual predator, and the ease with which male artists were able to blame women for their sexual inadequacies and neuroses, the image of the praying mantis continued to be represented by many artists. An interesting, if not disturbing, depiction of the combination human-insect form of the praying mantis image is found in the work of Felix Labisse. Perhaps the most explicit image of the mantis in its role as a *femme fatale* occurs in his *L’Aventure Permanente* from 1944 (Fig. 7). Of particular note is the resemblance to Renaissance portraits in the way the figure is painted. She stands in a full frontal position, with her breasts exposed; her left hand cups or offers her right breast to the viewer. The

soft landscape behind her is reminiscent of those done by DaVinci and Raphael. However, “the curtain of viscera at the right strikes a more macabre note” (Pressly 615). The woman’s hands are bloody, with no indication why—perhaps an indication of a fresh kill. Her “impassive mantis head, subtly altered to suggest male genitals” (615) lends itself to more than one interpretation. It may be symbolic of the woman’s/praying mantis’ castration of the male genitalia—once she has devoured it, she assumes its image and power. Certainly, this chilling image represents the male fear of castration that continued to prevail as a dominant Surrealist theme for several decades.

The woman as an independent, sexual being presented a powerful, frightening image to the male Surrealist artists. By representing her in the image of the sexual predator/praying mantis—and in some cases, conquering her, they were able to alleviate their sexual neuroses. By casting blame on women, the male Surrealists deflected responsibility for their own issues. It is ironic and sad that throughout history, men have attempted to control women’s sexuality through art, politics, religion, and social custom. The male Surrealists simply continued this custom, but instead of attempting to control women’s sexuality, they used it to hide their own fears of castration, impotence, and sexual ineptness.

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How Has The Patriot Act Changed the Role of U.S. Citizenship and How Has It Threatened Our Civil Liberties?

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On October 26, 2001 Congress enacted the U.S.A. PATRIOT Act, just six weeks after September 11. While the Congress itself never read the entirety of the document, it passed almost unanimously in the House and the Senate. It emerged in the context of tragedy, when the country was wounded, vulnerable and patriotic. Our spirits were heavy and our fears were difficult to manage. Since its emergence the U.S.A. PATRIOT Act has become contested and controversial. Academics, politicians, and citizens advocating for the left are worried that vital rights of citizenship are and will be violated by the Act and those who enforce it. Initially the political right defended the Act and its larger goal of controlling terrorism until more recently when many conservatives lashed out at the ways in which this act and others like it create conditions for big government (Finely, 2005). Now, a critical mass of citizens is not only worried but is fighting against its basic tenets.

Discourse surrounding the PATRIOT Act is circulating in many sectors of public life; since it was passed it has received tremendous attention from the media, the legal system, and most recently from other institutions such as medicine and libraries. Its parameters are not only vast, but also convoluted and vague.

In my research, I identify sixty other legislative acts and 322 appropriations (Appendix) that were invoked, revised, or revived within the PATRIOT Act, and I suggest that the vagueness and inconsistencies of the U.S.A. PATRIOT Act result, in part, from this massive hodge-podge of legislative references. It is ironic that so much circulation exists for a text that is nearly impenetrable. People are frustrated and fired up about this act, yet few people can read and understand it, neither its organization nor internal logic.

In the essay that follows, after assessing the textual challenges, I turn to section 215 of the U.S.A. PATRIOT Act, particularly those references to surveillance, search and seizure, and access to information. Besides the ACLU, a surprising group of people constitute the bulk of the resistance to the USA Patriot Act: librarians. As a trustee of the Brandon Township Library, I am affected personally and politically by this act; thus I probe the text from the vantage point of librarians who do not want the free access of information to be disciplined.

Revising Rights

The Bill of Rights is the foundation for our basic rights of citizenship Vijay Sekhon argues that the U.S.A. PATRIOT Act violates and compromises four different sets of our civil rights, those affecting search and seizure, the due process of law, the freedom of speech and the rights to legal council. The government uses the purpose of the PATRIOT Act “to deter and punish terrorists acts in the United States and round the world, to enhance law enforcement invest gory tools, and for other purposes” (U.S.A. PATRIOT Act, 2001) to shift our concerns away from individual rights toward the larger interest of the nation. Thus, national security trumps civil rights.

Many legal scholars argue that the PATRIOT Act will lead us into a police state mentality.

Other political theorists highlight the dehumanization at work in the current administration; some go so far as to say that technologies of surveillance can be turned back on citizens to police and manage their lives (Foucault, 19). However, when one actually turns to the text of the PATRIOT Act, the changes in due process, surveillance technologies, rights to counsel and the question of Arabs and South Asians, the text is convoluted at best a string of revised and unexplained former legislative acts. Robert P. Abele's text "A User's Guide to the U.S.A. PATRIOT Act and Beyond" is an overview of the broad powers of the laws invoked to conduct surveillance on American citizens. Abele's book examines this set of laws that gives the federal government more power over our lives in an attempt to "reduce the chances of future terrorist attacks" (Abele, 104).

Research on the U.S.A. PATRIOT Act involves listing and referencing numerous other legislative acts. The information is difficult to comprehend due to the immense number of acts and the process involved in the inclusion of their information. The sixty acts that are invoked are a fearful attempt to prohibit further terrorism. The 322 appropriations are our federal leaders' intrusive manipulation of legal text to "take advantage of the fear and terror of the moment by pushing legislation through Congress that vastly expanded the governmental power and radically truncated the civil rights of the citizens of the United States" (Abele, 4).

The term citizenship encompasses numerous aspects of our society's civil rights that we have grown accustomed to having: freedom of speech (Constitution, 1st Amendment), right to assemble (Constitution, 1st Amendment), and freedom from discrimination (Constitution, 15th Amendment). These freedoms have been won through diligence and patriotism. Patriotism is an emotional word, even more so since the attacks on the World Trade Center and the Pentagon. The U.S. Constitution and its 23 Amendments were developed to protect the civil rights of citizenship for a country based on hope. The First Amendment states that Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances. The media has indicated that Section 215 (Access To Records And Other Items Under The Foreign Intelligence Surveillance Act) of the Patriot Act has been protested by several communities and librarians.

Section 215 has been the instigator of more protests and lawsuits than any other; and from a surprising sector: librarians. "Previously the government needed *at least* a warrant and probable cause to access private records. The Fourth Amendment, Title III of the Omnibus Crime Control and Safe Streets Act of 1968, and case law provided that if the state wished to search you, it needed to show probable cause that a crime had been committed and to obtain a warrant from a neutral judge. Now the FBI needs only to certify to a FISA judge – (no need for evidence or probable cause) that the search protects against terrorism" (Lithwick, 4).

"Four states and 355 cities and counties have passed resolutions to protect their 55,168,702 residents' civil liberties" (BORDC, 2004). Freedom of speech or speaking out about differences is a civil liberty in jeopardy because this constitutionally protected right involves research, which is under scrutiny. Section 215 (Access to Records and Other Items under the Foreign Intelligence Surveillance Act), in summary, modifies the rules on records searches. "Records can be searched without your knowledge or consent, providing the government says it's trying to protect against terrorism" (Lithwick, 77).

In May 2003 a group of librarians in Palo Alto California protested publicly the Patriot Act. "In addition to the librarians, the article states that the police chief is supporting a resolution before the City Council that would prohibit her department from aiding the FBI in Patriot Act

searches, interviews or surveillance without evidence that a crime has been committed” (BeSpacific, 2003). Though the increased use of developing technology seems unavoidable, it is important that we do not allow this opportunity to negate our Constitutionally defined rights.

How has the collective violence of September 11, 2001 and the U.S.A. PATRIOT Act changed our roles as citizens? As American citizens, it is our personal patriotic duty to be diligent in our protection of the rights of our society. The vigilance of each individual is required to maintain the rights of the populace. We each have a capacity to protect our civil rights; it’s how we spend our capacities. We must be vocal when the Patriot Act is invoked for matters beyond its intention and homes are searched, individuals are detained, our records are requested, or due process is violated.

We must find the courage to choose to participate in protecting the rights that the U.S. Constitution developed. The USA Patriot Act of 2001 was created to protect citizens from the horrendous destruction of terrorism and reestablish the security that was designed into our democratic society. The good intentions of the Patriot Act are producing a long range strategy that is given opportunity to do just the opposite.

The U.S.A. PATRIOT Act was a response to an emotional experience; passed in haste with those voting afraid to appear unpatriotic if they resisted. The role of our legislature is to develop laws to govern and protect our rights as citizens.

The Patriot Act was created to be the all-encompassing text for the fight against terrorism. I have attempted to comprehend this convoluted mass of well-intended legal jargon with the quantitative development of charts for analysis. There are sixty different acts referenced and appropriated by the U.S.A. Patriot Act of 2001 (Appendix A: Acts Revised and Appropriated by the U.S.A. Patriot Act Of 2001). Many acts are revised numerous times (Appendix B: Acts Revised by Section in the U.S.A. Patriot Act). There are a total of 332 revisions to other acts appropriated by the Patriot Act. For example, the Patriot Act revises and appropriates Foreign Intelligence Surveillance Act of 1978 (FISA) 16 different times, in total. These appropriations were intended to update the electronics permitted for terrorist surveillance. “Amendments to some statutes produce an effect greater than catching terrorists” (Schemmel, 2). By appropriating sixty other acts into its legislation, the Patriot Act’s exact parameters are difficult to comprehend. It’s this vagueness that lends it to the abuse of civil liberties because it can be misconstrued and used as a tool against innocent citizens.

Scrutiny shows that those U.S. citizens may not be subject to search, based on protection by the First Amendment to the Constitution. “That means you can’t have your records searched solely because you wrote an article criticizing the Patriot Act. But if you are originally from India and write that article, well, that’s not “solely” anymore is it? If you’re a U.S. citizen and not otherwise suspicious, you’re probably safe, so long as all you do is read” (Lithwick, 4). The librarian made to turn over records is gagged and cannot disclose the search to anyone, so you would never know if Section 215 had been used on you. From an informal survey of the field offices, “libraries have been contacted approximately 50 times, based on particularly suspicion or voluntary calls from librarians regarding suspicious activity” (Lithwick, 5). But since librarians are gagged under this section, it’s impossible to know if these reports are accurate.

The message of the Bush administration that you’re either with us or against us makes it hard for some Americans to accept that they can be patriotic and dissent. But, “the Founding Fathers’ solidified the rights of free speech and assembly in the Constitution’s First Amendment. It’s a fundamental message – that to dissent is patriotic, even in wartime. The Patriot Act of 2001 has used security as an excuse to rob Americans of their liberties” (Cryer, 2004).

The purpose of the U.S.A. PATRIOT Act is to find the sources of terrorism and eliminate them. According to the world's largest on-line library, terrorism is "an illegal act of violence against a government, the general public, or individuals for the purpose of political or social objectives"(Questia, 2004). Targets of terrorism are usually symbolic in nature, and are carefully chosen to create chaos by destabilizing political or social order.

The Patriot Act attempts to eliminate terrorism and the people that perpetrate it, tracing the money, utilizing all available technology, sharing information between government departments, streamlining surveillance procedures, and by scrutinizing information on all levels. "The Patriot Act affords the FBI and the CIA more agency to tap into the phone lines, email accounts, credit card records, charitable donations, library records, and health records of U.S. citizens and residents, all in the name of security" (Hay, 4).

Surveillance when defined as close observation seems caring, almost like a parent surveying a playground scene. As technology advances, the extensive ability to observe is extraordinary in the use of sophisticated equipment for watching.

Much of this cutting-edge equipment has humanitarian uses too, such as arthroscopic surgeries and space exploration; amazing things. Section 216 allows law enforcement the use of this advanced technology in the surveillance of computer use in Web surfing and extends provisions authorizing the installation of pen registers (records the numbers dialed on a telephone without recording the conversation).

But, just as surveillance when taken to dark extremes is scrutiny and espionage, the Patriot Act has taken its sense of security for our homeland, thus homeland security, to intimidating depths that violates and dissolves the sense of security it should be generating.

We should not allow our fears to cause us to abandon the civil liberties that the Framers of the Constitution developed for the protection of our freedom.

Section 206 (Roving Surveillance Authority Under the Foreign Intelligence Surveillance Act of 1978) revises and appropriates the Foreign Intelligence Surveillance Act of 1978 ("FISA") to include electronics in surveillance without a court order. This eliminates the checks and balances necessary in a democratic society. "Before the Patriot Act, wiretapping conducted under FISA could only be authorized when gathering foreign-intelligence information was the primary purpose of the surveillance" (King, 2002). Historically the possession of unchecked power has led to corruption. The unchecked control that the Patriot Act allows by negating the requirement of application for a wire tap could be too much power for police and FBI agents. The government does not have to establish probable cause of commission of a crime (King, 2002).

Ground zero is hallowed ground, anointed with blood, sweat, and tears. The grief process has given rise to new emotions; we have moved on to new attitudes and its time to let the USA Patriot Act of 2001 pass away, as allowed by the Sunset section 1005. This hastily passed act gives rise to new emotions that challenge our basic beliefs as citizens of the most powerful nation on Earth...invasion of privacy, helpless ignorance, and financial disgust.

How has the Patriot Act changed the role of U.S. citizenship? Our lives and our roles as citizens have changed because of September 11, 2001 and our new responsibilities must include skeptical vigilance over the leaders that would negate our civil liberties in their pursuit of terrorism.

What is your flashback memory of September 11, 2001? This memory is the 21st Century reference point, just as "Where were you when President Kennedy was shot?" was for those born in the late 20th century. I was volunteering in my children's school library and watched a live

broadcast of the Trade Towers falling. Emotions included shock and terror; we mothers spoke of the future wondering if our young children were going to grow up to fight in this war. It was coming too close to home and heart.

The list of reactions emoted in the post-9/11 frenzy is long, just as the list of acts referenced in the USA Patriot Act of 2001 (H.R. 3162, S. 1510, Public Law 07-56) seems interminable. Each emotional reaction seems to have fueled a section of the Act in an attempt to reduce the fear and increase the security of American citizens. We should not allow our fears to cause us to abandon our civil liberties. Congress passed the U.S.A. Patriot Act, an acronym for Uniting and Strengthening America by Providing Appropriate Tools to Intercept and Obstruct Terrorism, on October 26, 2001, just six weeks after the terrorist attacks on the World Trade Center and the Pentagon.

Our future and our prosperity are in the hands of those that hastily passed the Patriot Act of 2001, without reading it. And we have re-elected the man whose watch 911 happened on. Let us be vigilant and remember Lord Acton's insightful warning that "power corrupts, and absolute power corrupts absolutely."

"By analyzing the Patriot Act, I had hoped to find a purpose for the destruction and sadness that terrorist acts have contributed to all of our lives; I found the potential for the loss of the rights that have made our country dynamic. Contact your representatives and voice your fears, let the Sunset on the USA PATRIOT Act.

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Appendix Acts Revised by the U.S.A. PATRIOT Act of 2001

N o.	Pa ge	Pages revised	Se c.	TITLE OF SECTION Name of Act
1	2	2,14,16(4), 21(2) 22,30,34(2) ,35, 124(2),153, 159		Foreign Intelligence Surveillance Act of 1978 (FISA)
2	3	3, 38, 64		International Money Laundering Abatement and Anti-Terrorist Financing Act of 2001
3	4	4, 67, 75(2)		Bank Secrecy Act
4	6	6,130,131(3) ,132(3), 133(3),34(4), 134, 135(2)		Victims of Crime Act of 1984
5	7	7,12,13,153 ,154(2), 55, 157(2)		National Security Act of 1947
	9		2.	CONSTRUCTION; SEVERABILITY.
	9		101	COUNTERTERRORISM FUND
	9		102	SENSE OF CONGRESS CONDEMNING DISCRIMINATION AGAINST ARAB AND MUSLIM AMERICANS.
			103	INCREASED FUNDING FOR THE TECHNICAL SUPPORT CENTER AT THE FEDERAL BUREAU OF INVESTIGATION.
6	10	10, 12, 151		Antiterrorism and Effective Death Penalty Act of 1996
7	10	10		National Electronic Crime Task Force
8	10	10		New York Electronic Crimes Task Force
	10		104	REQUESTS FOR MILITARY ASSISTANCE TO ENFORCE PROHIBITION IN CERTAIN EMERGENCIES.
	10			United States Code

	10		105	EXPANSION OF NATIONAL ELECTRONIC CRIME TASK FORCE INITIATIVE.	
	11		106	PRESIDENTIAL AUTHORITY	
9	11	11		International Emergency Powers Act	
10	11			Classified Information Procedures Act	
11	11	10,11,12,13,14,15, 17,18, 19(2),20, 22,23(2),26,28(3),29(3), 30,31(2), 32,33(3), 39,46, 46, 8(3),48, 51,53(5),53,55,55,57,59,60,61,63,67,68,69,70(2),71,73,74(3),79,82,83(2),84,85,86(4),87(2),88,89,90(2),90,91(3),91,92(3),92(3),93(7),94(2),94(7),95(3),98,107,108,123,124,125,127(2),127,128,136,138,139,139,40(2),140,141,143(3),144(4),143,45(7),146, 147,148, 149,150, 160			United States Code
	11		201	AUTHORITY TO INTERCEPT WIRE, ORAL, AND ELECTRONIC COMMUNICATIONS RELATING TO TERRORISM	
	11			United States Code	
	12			Antiterrorism and Effective Death Penalty Act of 1996	
12	12	12,110(2),111(3)		Illegal Immigration Reform and Immigrant Responsibility Act of 1996	

() multiple revisions on page

The Laughing Equation: Humans as Mechanic

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The equation for laughter has been criticized for over two thousand years. Henri Bergson in *Laughter (De rire)* is one such critic. When removed from social, political, or cultural bias; one finds this equation rather simply. The equation of a comedic effect is; Laughing or comedy equals humans as mechanic. One of the better examples of this effect is the comedies of William Shakespeare, though by no means does the artist have a monopoly. Here in, the goal is to find how this comedic equation fits into a play such as *Twelfth Night*. Does it hold up? Through specific use of the classical comedy by Shakespeare, this equation will be tested, so that it may be used in understanding historic and contemporary comedic plays and movie scripts.

Why are humans mechanic and why is this funny? "... A comic character is generally comic in proportion to his ignorance of himself (Bergson 71)." One may further argue that this ignorance is the lack of knowledge over mortality and of bodily functions. Both mortality and human bodily functions are mechanical, uncontrollable features of humanity. Like a simple machine, thus mortality and bodily functions can be broken into kinetic and potential energies. Life and the act of living are kinetic, dynamic, and motile. Death is the lack of these characteristics; invariable, unchangeable, and inert. Bodily functions toggle the line between living and dying. Cells are constantly regenerating, dying, and adapting. Living matter ages, as well as, fades from productivity. This cycle is inevitably mechanical and relatively rigid. Bergson states that; "We laugh every time a person gives us the impression of being a thing (Bergson 97)." One may argue, using the basis of Bergson that whenever a person or character shows signs of being part of the cycle of life and death, there is a tendency to laugh. Examples are of a man stumbling and falling and a man in the grips of an unalterable habit (or personality trait). "The laughable element in both cases consists of a certain mechanical inelasticity, just where one would expect to find the wide-awake adaptability and the living pliability of a human being (Bergson 66)." Being unable to be consciously adaptable or elastic and dynamic is a common trait of human nature. Bodily functions remind us of this nature; thus they remind us of mortality. Comedy celebrates life. Its heroes conquer death or adapt and rejoice. These comic physiognomies are all in relation to the equation of comedic literature. If laughter occurs when reminded of the machine of humanity and mortality, then comedy must occur when a comic character toggles between death (potential or stopped) and life (kinetic).

William Shakespeare can test this equation. Undoubtedly death's powerful presence is in Shakespeare's comedies, as well as, other plays should be acknowledged. In "Twelfth Night: The Limits of Festivity," critic Thad Jenkins Logan notes that "there are thirty-seven [references] to destruction and death" in this play (qtd. in Logan 236). This looming subject of death is nothing new to drama or comedy. Plays from Euripides, Aristophanes, Terence, to Moliere and beyond have all had death either direct, looming, or in setting or plot. Juxtaposed to death is the etymology of comedy, KÖMOS. KÖMOS, the happy end or Nightsong ideal, gains its origin with Phales, the comrade of Bacchus. This presents a sense of life, sex, and energy, as well as, the happy ending and "comic spirit". Arguably, life and death are the mechanical puppet strings to the human condition. Laughter is found due to the exposure of this mechanism. For example, in *Twelfth Night*, the inevitability of death and the passage of time are almost always the subjects

of the music in this comedy. Threats of death multiply and magnify as the play progresses (Marciano 6). Sir Andrew and Cesario nearly duel, Sebastian gives Sir Andrew a bloody head, Antonio is imprisoned and aimed for death, and Olivia is threatening suicide. Yet, it is the mechanical nature in which these items are presented that makes them comical. Bergson notes that, "The attitudes, gestures, and movements of the human body are laughable in exact proportion as that body reminds us of a mere machine (Bergson 79)."

In *Twelfth Night*, examples of the body as a machine personifying the clashes of kinetic and potential energies are common. Beginning with Duke Orsino, enjoying the melancholy nature of Feste's songs and the damnation of his supposed "love" of Lady Olivia. Thus, he is judging pleasure through his pains. Yet more importantly he is judging his life (action) through the melancholy (inaction). This tends to be laughable because it reminds the audience or reader of our own mechanical nature of judging life occasionally by pain, melancholy or folly. Additional humor is added when through dramatic irony, the audience is appreciative of his ignorance of himself.

DUKE: O' she that hath a heart of that fine frame
To pay this debt of love but to a brother,
How will she love, when the rich golden shaft
Hath kill'd the flock of all affections else
That live in her; when liver, brain, and heart,
These sovereign thrones, are all supplied, and fill'd
Her sweet perfections with one self king! 1.1.32-38 (112)

His response can be paraphrased thus: "If she has such ardor in mourning her brother, imagine how she will love when Cupid's arrow strikes (Marciano 9)!" Through the irony can be paraphrased as: "If Olivia has a fiery intensity for being in mourning and stasis, imagine how she will be with the lively energies of the comedic spirit." Again, the humor occurs because Orsino is ignorant that he, as well, is mechanical and experiences melancholy and folly for life. Furthermore, Olivia is comic because she is knowledgeable of her effort to be static, over energetic. "Death should be mourned, as ritual demands, and having been mourned, it should be forgotten (Turner 59)." Olivia allows it to interfere with the living of one's life in the present purposefully. This digression sets Olivia in alignment with living in the static realm of death itself. Soon after, a young noblewoman is shipwrecked and found. This toggles the line of death and life. Viola, like the dismissals of life for death by Orsino and Olivia, chooses to become a servant under Duke Orsino. Furthermore, to do this she must; disguise herself, becoming ignorant of herself - repress her sexual wants, thus removing KÖMOS - seek service, a mechanical action. Each of which are lethargic forms of living and clockwork repressions of positive forces. Just in scene one and two, the evidence of mechanical behavior is apparent. Furthermore, as with the pattern of comedy, it sets the plot for the machine of conquering the shade of death (potential or stopped living) with freedom and the happy end. This machine is inherently comedic because; "When a certain comic effect has its origin in a certain cause, the more natural we regard the cause to be, the more comic shall we find the effect (Bergson 68)."

Laughing at the machine is laughing at the superiority over death (kinetic / potential). Comedies end in marriages, such as Viola and Orsino or Olivia and Sebastian, as well as minor characters, such as Sir Toby Belch and Maria. Comedies end with KÖMOS, literally a happy dream for the characters that will soon make a wedding bed. Comedies end with the triumph

over the restrictions that are both mechanical and static, like Viola pronouncing herself a free woman – not under the unchangeable role of disguised heroine. In the case of *Twelfth Night*, each character was victorious over the static state of their lives set in the first act. It is in action and flexibility that comedy works. Through the cycle of kinetic and potential plots and characteristics, the laughable sense of victory over death-like environments can be enjoyed. One finds the comic element in his or her ignorance of their prior self. Thus, laughing and comedy equals humans under the cyclical machine of mortality. Each end points to the other - life/death, kinetic/static – and they laugh at the oddity of their placement. Just as we laugh at ourselves and our comedic characters in the placement of human nature.

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The Reigning Perspective: Government Manipulation of Wartime Media Coverage and Its Implications

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“You know, you never defeated us on the battlefield,” said the American Colonel. The North Vietnamese pondered this remark a moment. “That may be so,” he replied, “but it is also irrelevant.” (Summers 1)

The American colonel was right. United States military forces had greater numbers, technological superiority, better training, and more efficient officers than their Vietnamese opponents. Americans won most of the larger engagements and maintained better command of the battlefield. However, surveys which studied public sentiment during the conflict found that 65 percent of Americans believed the war was both a mistake and “immoral” (Howell 4). Confounded by sudden shift in public and Congressional opinion, the military found a convenient scapegoat in the media. Given full access to the Vietnamese battlefields, reporters and professional photographers produced particularly disturbing visual documentation of the conflict. With the advent of widespread television news, these images found a far greater audience and produced a public backlash previously unseen in American history.

Tempered by the public outcry created in part by unrestricted media coverage of the Vietnam War, the United States government manipulated imagery of subsequent conflicts by restricting press access to troubling events, confiscating particularly visceral images, and placing a positive spin upon those images which could not be controlled. Through containing and obscuring potentially damaging media coverage, the administration shaped the public's perception of these conflicts at the expense of an accurate portrait of combat and its consequences. While the images emerging from Vietnam revealed the horrors of wounded troops and civilian casualties, those arising from later conflicts were devoid of real combat. This approach seemingly purged the struggle of the filthier aspects of armed conflict, effectively creating the perception of a bloodless war.

The first American helicopter landed in Vietnam on December 11, 1963. Shortly thereafter, Congress approved the Gulf of Tonkin Resolution, which marks the initiation of full-fledged military action in the jungles and swamps of the underdeveloped Eastern country. Sent to stymie North Vietnamese invaders and halt the spread of communism, the American presence grew, peaking during the 1968 Tet Offensive. The U.S. military allowed and even encouraged the press to report directly from the field. The armed forces would often provide “transportation, lodging, meals, and briefings to a U.S. press corps that eventually grew to battalion-size strength” (Howell 9). Journalists and photographers were often deployed with the troops, and the flow of information and imagery from Vietnam to the U.S. press establishment was uninhibited by military censors.

The military-press relationship was born during the Second World War, a precedent which would be broken at the onset of the Vietnamese conflict. Coverage of World War II was defined by an extraordinary amount of cooperation between the government and the press. Byron Price, the Executive News Director of the Associated Press, was the government's

foremost censor, chosen by President Roosevelt himself. The news media willingly instituted a “Code of Wartime Practices,” which helped reporters and photographers dodge unintentional disclosure of information and imagery that could prove harmful to the war effort (Kehoe 6). Many journalists would even go so far as enlisting and being deployed as military press information officers for the length of the conflict. Those who did not enlist would still wear U.S. military uniforms while reporting from the field. This air of dogged loyalty continued into the Korea War, during which the press actually requested censorship by government and military officials. While this extreme degree of cooperation undermined any form of objective or journalistic integrity, the American press establishment felt bound by a responsibility to present a unified, noble, and victorious front during a time of crisis.

The American press would change markedly during the early 1960’s, when the public witnessed a series of scandals. Francis Gary Powers’ U-2 spy plane crash over the Soviet Union, the Kennedy administration’s disastrous Bay of Pigs invasion, and finally Kennedy’s own assassination at the hand of Lee Harvey Oswald led to a widespread malaise which eroded public confidence in the U.S. government. It was within this climate that the press began to cover the Vietnam War. Shirking the government-sponsored and press-accepted censorship that had defined prior conflicts, the news media presented the war in a realistic and often disparaging tone. The military’s actions were under the close scrutiny of a pervasive and often critical press.

While the extent of the media’s coverage increased, so did its accessibility to the American household. NBC and CBS doubled their national news coverage from 15 to 30 minutes in 1963, the first year most Americans claimed to have received the majority of their news from television rather than magazines or newspapers (Howell 10). Technological advancements helped sustain television’s dominance with a significant escalation in the quality, size, and number of color televisions in American homes. At the beginning of the war, news agencies required 20 hours to transport visual information from Vietnam to the United States. However, as the conflict persisted, this figure was drastically reduced due to the advent of communications satellites. Major Cass D. Howell, a marine officer who has written extensively and critically on the press’s involvement in Vietnam, comments:

“It was these factors – a doubting, often critical press, expanding and increasingly powerful television networks, and unparalleled access to a war zone that set the stage for the decisive event of the American defense of South Vietnam – the erosion of the willpower of the American people (11).”

Although Howell makes the specious assumption that it was the coverage of the war and not the war itself that eroded the “willpower of the American people,” he correctly identifies the circumstances surrounding America’s “first living room war.” While describing this new phenomenon in wartime coverage, David Halberstam asserts that television “projected into the American home night after night... pictures of American troops dead and dying and killing... As a result, the war, with all its ‘horrors’ was fought in everyone’s living room” (397).

However, it would be wrong to assume that gruesome, war-related imagery inundated television news. While stories related to the Vietnam War and its victims were prevalent, the majority were bereft of photographs or film of actual combat. Surprisingly, graphic coverage of the dead or wounded constituted very little of Vietnam-related pieces. A study analyzing the amount of visceral imagery found in major network coverage of conflict reported that CBS only

relegated 3.1 percent of its Vietnam-related pieces to imagery of the dead or dying. NBC and ABC aired an even smaller amount of explicit combat, broadcasting 1.8 and 1.7 percent respectively (Patterson III 402).

While the amount of coverage dedicated to imagery of the dead or dying was miniscule compared to the rest of Vietnam-related television material, that limited amount had a monumental and indelible effect upon the public. Certain images took on a iconic significance, symbolizing the Vietnam War as a senseless waste of human life and the U.S. military as a cruelly puerile juggernaut. Images such as the Buddhist monk's self-immolation, General Loan executing a Viet Cong prisoner, and a panicked and suffering girl accidentally doused in napalm became seared within public consciousness and provoked virulent antiwar sentiment. Photographic news of the 1970 bombing of Cambodia prompted severe protests within American universities. Kent State University students burned down a local ROTC building, inciting the National Guardsman, who fired upon them and left four dead. This event was caught on film as well, triggering an even larger protest in Washington (Hill 68). The public's revulsion was mirrored in Congress, who demanded the immediate withdrawal of armed forces from Vietnam. President Nixon began the exodus in 1969, and the last official American military personnel were removed from Saigon in December, 1975. Some years after, Nixon commented upon the calamitous circumstances surrounding the retreat: "The War in Vietnam was not lost on the battlefields of Vietnam. It was lost in the halls of Congress, in the editorial rooms of great newspapers, and in the classrooms of great universities" (Howell 4).

Taking Nixon's words to heart, the military placed sole blame for the Vietnam debacle on the press, waging a campaign of control, censorship, and misinformation that would become more sophisticated with each successive conflict. The press's first experience with the modern military-media-complex occurred in 1983 during the invasion of Granada, where reporters were forbidden to cover actual military action. Reporters already in Grenada before the initiation of Operation Urgent Fury were captured by U.S. military personnel and held until after the fighting had ceased (O'Sullivan 39). Granada news-correspondent Richard Valeriani later commented, "[The military] simply excluded the media, including me, for the first three days. I was forced to cover the war from the 'trenches' of Barbados" (24). Following initial objections by a small amount of reporters, the free press submitted to the military's demands and voluntarily withdrew from Grenada. In a statement eerily reminiscent of the Second World War's "Code of Wartime Practices," the *Washington Post* declared, "We think President Reagan made the right decision in Grenada. He redeemed a truly disturbing situation with an economical use of force" (O'Sullivan 39). Of course, the *Post's* laudatory proclamation was based entirely upon military briefings. There was no on-site reporting. These practices continued during the invasion of Panama in 1989, during which U.S. Civil Affairs officers escorted reporters and dictated what information was suitable for coverage.

By the first U.S. invasion of Iraq in 1990, the military had refined its system of control and censorship. The only reporters allowed upon the battlefield were those chosen by military officers. These trusted few were lumped into "press pools," which were constantly shadowed by Defense Department "minders" to prohibit impromptu photography and spontaneous interviews with soldiers (Boot 23). Stories were revised and softened by military censors, photos were confiscated, and reporting credentials were rescinded routinely. Anyone foolish enough to break the press embargo was customarily removed from the battlefield and sent back to the United States. Rather than challenge the military's blatant manipulation of wartime coverage, the press abdicated after meager and short-lived complaints. Social critic Paul Fausel, an expert on media

subjugation during times of war, stated, “When [the press] first heard of these guidelines, they should have raised an incredible, obscene howl. Instead, they grumbled about the First Amendment but really acted as if they were honored to be in Saudi Arabia” (Boot 23).

The result of the military’s zealous censorship and the press’s acquiescence was an aestheticized conflict, a war perceivably bereft of human casualty. Whereas the imagery emerging from Vietnam focused upon the human cost of an often brutal and unforgiving conflict, Iraqi footage is steeped in neoteric technology and patriotic hubris. CNN, the principle source of news for the majority of Americans during Operation: Desert Storm, showed countless scud missiles rocking Baghdad, but failed to present the effects of the attacks. The videos were blurry and distant, markedly separated from the event being covered. The footage assumes a transcendent detachment from those maimed or killed by the attacks. Hence, the military effectively purged the first Iraqi conflict of those elements which best define war – the dead and the dying. William Broyles, Jr., the former editor-in-chief of *Newsweek* and a decorated Vietnam War veteran, described the coverage in a 1991 interview:

“The war has become a television show, which I expected, but in a very bloodless and distant kind of way. The sense of war as the massing of the means of death and destruction and its application against an enemy is completely lacking (Valeriani 24).”

Remarkably successful from a public relations perspective, Operation: Desert Storm enjoyed a sympathetic response from the American people. In fact, polls showed overwhelming support for tougher restrictions on the press (Boot 23). While a small number of reporters fought for the public’s right to know and were banned from Iraq as thanks, most Americans were pleased with the austere snapshot of technological precision presented by the military-controlled press.

The images of “techno-war” continued into the twenty-first century with Operation: Iraqi Freedom, during which imagery of technological weaponry and patriotic displays intertwined to form a complicated narrative of American victory and the spread of democracy (Griffen 817). Whereas the footage of Desert Storm was dominated by scud missile attacks, Iraqi Freedom’s hallmarks were stealth bombers, massive movement of troops via tanks and helicopters, and green-tinted videos of nighttime activity. Footage of the toppling statue of Saddam was shown repeatedly, reinforcing the notion of a tyrannical regime crushed by the proliferation of democracy. Eagle’s-eye view shots of smart bombs finding their precise targets flooded CNN’s 24-hour war coverage, supporting the military’s claim that modern weaponry reduced collateral civilian casualties. The images presented a united, technologically advanced, and ideologically sound military force incapable of mistakes. Markedly absent are images of the dead or dying – be they of American or Iraqi blood.

The smart bomb footage – provided during military news briefings – “depict the ‘delivery ordinance’ upon a target with all the high-tech precision and sterile calculation of a video game” (Scodari 1). The comparison is telling, unveiling the psychology that exists at the core of combat techno-imagery. The military’s handling of the Iraqi conflicts has reconciled the gap between war and gamesmanship in inconspicuous yet sinister ways. Both corrupt and surreptitious, this approach allows the public to experience the war as a game rather than a serious international event in which people kill one another en masse. Media presentation of modern warfare purges the American people of both involvement and guilt, allowing them to witness the horrors of

combat as a thrill-seeking spectator. Christine Scodari described this dynamic, stating, “The effects of personalization, identification, humor, stimulation and coherency promoted by this narrative... between sport and warfare may entice audience members to seek out the stimulation of war for the same reasons that they seek out the stimulation of sport” (4). The implications of this theory are far-reaching and insidious, suggesting a society more concerned with entertainment than an accurate portrait of wartime events.

April 28, 2004 marked a significant break with the “war-as-sport” mentality. The story of American soldiers torturing Iraqi detainees at Abu Ghraib prison flooded into public consciousness, splintering the carefully built media security so valued by the U.S. military. CBS aired the piece after suppressing shocking photographic evidence for two weeks, obeying Pentagon orders to withhold the report (Hanson 60). Although the network’s two-week stint of self-censorship is disquieting, it was only the last in a series of flagrant attempts to conceal the photographs from public scrutiny. Nearly a full year before the story broke, Amnesty International published an 832-page report detailing brutal and systematic abuse of Iraqi detainees by U.S. and British military personnel. A similar document was written by the Red Cross in February 2004, claiming over 200 cases of alleged abuse in May 2003 alone. Yet another document, dated November 5, 2004, described prison conditions that gravely violated Geneva Conventions. The Pentagon itself commissioned an investigation in February 2004, yielding a 53-page report which proclaimed “systematic and illegal abuse of detainees” which was “sadistic, blatant, and well-documented by photographs” (Niman 18). These and other accounts of prisoner torture, rape, and murder were consistently ignored by the U.S. government. When the photographs were finally released, the administration claimed they were simply waiting for an appropriate time to air the report. Defense Secretary Donald Rumsfeld, in an unusually revealing statement, claimed:

“There are other photos – many other photos – that depict incidents of physical violence towards prisoners, acts that can only be described as blatantly sadistic, cruel and inhuman. If these are released to the public, obviously it’s going to make matters worse (CNN.com).”

The photographs are a grisly reflection of the Vietnam War imagery, once again casting the U.S. military as barbarous, sadomasochistic, and uncontrollable. Images that were created for private enjoyment amongst a closed circle of military personnel became social effigies. The photographs also serve an entirely new purpose of wresting the war from Pentagon censors and placing it back into the arena of personal suffering. While video footage of smart bombs and troop movement allowed the public to remain aloof and detached, the Abu Ghraib prison photos forced the American people to witness the face of armed conflict in a far more visceral and disturbingly intimate fashion. The prisoners became people rather than numbers, torture victims rather than detainees, and the dead and the dying rather than collateral damage.

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Thou Shalt Not Hope: The Church's Cold Shoulder in Juan Rulfo's Pedro Páramo

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Abstract

In this essay, I will argue that Juan Rulfo's Pedro Páramo (1955) indirectly holds the church responsible for the life of hardship and despair in a rural town of Comala, Mexico. In a territory plagued by machismo and caciquismo, where the poor can, at best, only satisfy the demands of their superiors, religion may indeed be their only prospect of happiness in a life after death. This hope, however, is taken away from them as they do not receive forgiveness for their transgressions, and are, therefore, faced with irredeemable eternal condemnation. The institution of the church is presented predominantly in Father Rentería—the figure who, I will argue, is most responsible for the desperation of Comala's residents. His inefficacy primarily has to do with his cowardice and the double standard he maintains in regards to his treatment of the indigent, as opposed to the affluent of his community. I will conclude with a final discussion about the purpose of the church as an institution overall and how the lack of this spiritual support is by far the most tragic of all the problems that Comala's inhabitants have to face.

To die without the opportunity of living. To know that no effort has the power to change destiny. To continue in misery and loneliness forever. To be born and to remain in the rural town of Comala, Mexico, in Juan Rulfo's novel, Pedro Páramo, suggests such a tragic destiny. Those who live in this town cannot find any form of lasting happiness due to the influence of the institutions that govern Comala. Although *machismo* and *caciquismo*, two phenomena that emphasize men's arbitrary power over others, contribute greatly to Comala's problems, I will argue that it is actually the church that is most responsible for the life of hardship and despair of Comala's inhabitants.

Under the presence and dominion of Pedro Páramo, the *cacique* and the tyrant of Comala, and because of his influence over the church and over its priest, Father Rentería, Comala turns into a hell on earth. Pedro Páramo's strong grip over the town perpetuates poverty and injustice for its inhabitants. Páramo represents male chauvinism and aggressiveness that no one can overcome. In his essay, "Los hijos de la Malinche," Mexican essayist and poet, Octavio Paz, discusses the duality of masculine identity, its *machismo* and its consequences for the entire nation. Paz stresses that Mexicans characterize themselves and others as strong or weak by their capacity to maintain power over others. The strong are thus condoned by their ability to humiliate, to punish, and to offend others; whereas, the weak are the victims of these actions (71). In Comala, everyone becomes weak under the reign of Pedro Páramo. Tragically, no one tries to change this situation, not even those who supposedly have the authority to do so, as for instance church representatives.

I would argue that the activism of the church could actually save the inhabitants who live abused and terrorized, but instead, this institution, entrusted to the priest of the village, remains passive. It neither resists Páramo nor fights for the poor. Although Páramo is a selfish and greedy man, he believes in God and in the idea of salvation and of heaven. Father Rentería is

aware of Páramo's beliefs, yet he does nothing to control the abusive *cacique*. As priest, he could use his position as spiritual leader to influence the actions of all believers, including unruly Páramo. Ideally, the church is able to offer the hope of a better life on earth as well as the assurance of salvation and, thus, eternal life after death. However, the idleness of the church in Comala only promotes the disillusionment of the town's believers.

For a town so obsessed with the idea of sin, the fact that the poor cannot receive absolution determines their destinies and destroys their lives. After the death of his mother, Juan Preciado, who is the protagonist of the first part of the novel, travels to Comala in order to find his father, Pedro Páramo. But instead, he encounters a village full of ghosts, and through their voices, he learns the intimate and tragic stories of Comala's inhabitants. The souls of the dead cannot rest because they have not received forgiveness for their sins in order to enter into heaven. The voices Juan Preciado hears are of the poor who had dreamed of heaven in their miserable lives on earth, but who never received any hope to enter it after death. For example, one woman who lives with her brother as husband and wife believes that her sin reflects itself on her body. She tells Preciado of the stains covering her inside and out (Rulfo 111). Being left alone in Comala after everyone else's deaths, the couple begins their incestuous relationship and decides to get married to legalize their unnatural status. However, when the woman asks a bishop for pardon in order to marry her brother, it is denied. This bishop, who only passes through the deserted town of Comala, ignores the woman's pleas, and thus condemns her to eternal desperation. Clearly, his high position is more valuable to him than the need to extend and maintain the faith of his people.

Another woman, Doña Eduvigis cannot receive pardon for having committed suicide although her sister, María Dyada, requests it repeatedly from Father Rentería. He tells the pleading sister that this sin could only be absolved if she were to give him enough money to pay other priests for this case. However, Father Rentería is very aware of María Dyada's own poverty and her inability to feed her own children (92). Knowledgeable of her condition, Father Rentería refuses to have compassion on her, as is expected of priests (Tormo 171), and demands the impossibly high bribe. When she reminds him of her desperate financial state, he simply tells her to leave things as they are (92). Yet in the Catholic church, the priest is the one who must absolve the sins of the body of Christ on earth. Consequently, when Father Rentería tells María Dyada to just leave things as they are, he removes all possibility of hope from the Catholic believer. He does not bless her, nor does he pardon other wretched sinners of his parish. Therefore, he is guilty for the state of dejection of Comala's inhabitants.

Perhaps the most tragic of all is the story of Dorotea, a woman who barely finds subsistence as a beggar. The only hope she clings to in her miserable life is that of entering a glorious heaven in life after death. Yet she never receives forgiveness for her sin—that of serving as a go-between for the son of Pedro Páramo, Miguel Páramo. Her suffering on earth intensifies when she realizes in a dream that she never had nor is going to have a child—the other great illusion of her life. This personal tragedy combined with the denial of her salvation by Father Rentería leads to her eventual disillusionment with the faith. Buried next to Juan Preciado, she says:

El cielo está tan alto, y mis ojos tan sin mirada, que vivía contenta con saber dónde quedaba la tierra. Además, le perdí todo mi interés desde que el padre Rentería me aseguró que jamás conocería la Gloria... cuando a una le cierran una puerta y la que queda abierta es nomás la del infierno; más vale no haber nacido... El cielo para mí, Juan Preciado, está aquí donde estoy ahora (124)¹.

Dorotea sees heaven as so high above and herself as so desperate and meager, that the assurance of remaining where she is, free from hunger and buried next to the body of Juan Preciado, gives her relative peace. Her heaven, then, is on earth. In the end, Dorotea, after having had so much faith in God, can no longer believe in what Catholicism taught her because it has only left her bereft of peace and of hope.

With the novel's emphasis on sin, Rulfo demonstrates the importance of religion in the Mexico of his time. Similarly, in his analysis of Rulfo's novel, Luis Ortega Galindo notes religion's place as an essential element of the soul of Mexico and how this reflects in all works of Rulfo (337). Nevertheless, the institutionalized religion—the Catholic church of Comala—is neither effective nor beneficial for the poor and the common. With respect to the transgressions of its inhabitants, the truth is that the majority of them commit their crimes out of necessity and in a state of sheer desperation. For example, Dorotea's dishonorable work for Miguel Páramo is performed because she has no other option in her struggle to survive. She must eat to live and Miguel Páramo offers her regular meals in exchange for sexual arrangements with all the town women. The incestuous couple lives in sin only because there are no other people left in Comala. Seemingly abandoned by the world, they consider themselves like Adam and Eve with the necessity to remain together in order to populate the village. It is worthwhile to mention one more sinner, Abundio, another son of Pedro Páramo who commits patricide in anger and frustration after the death of his wife. He is also among the poor of Comala, who, condemned by Father Rentería, roam the streets of the ghost town, unable to find eternal peace.

Contrasting with this group of wretched orphans abandoned by the church, Pedro Páramo executes his brutal laws never fearing for one second that he, too, could be denied salvation. The rich, Pedro and his son Miguel Páramo, sin although they could easily choose the way of righteousness. The greatest tragedy of Comala is that the people who enjoy the pleasures and the wealth of the world also have the blessing and the guarantee of heaven in life after death. The practice of the church in Comala—in serving the affluent and abandoning the indigent—contradicts the message of the church which ideally promotes justice, compassion, and equality.

In fact, in the novel Pedro Páramo, Father Rentería, the representative of Comala's church, epitomizes utter cowardice. The reader can see how he listens to all the confessions, but refuses to confront Comala's problems in his fear of the *cacique*. Specifically, his inability to intervene is evident in how he deals with his own family's problems. When his niece, Ana, is raped by Miguel Páramo, Father Rentería does not demand justice for her. Prior to this incident, he is aware that Miguel was the one who murdered his brother and Ana's father. Yet, Father Rentería neither demands justice for his family at the time of his brother's death nor after Ana's rape. Instead of confronting Miguel or going to other authorities, he remains mute and passive. If he cannot defend his own family, then, how can he protect Comala's believers who all entrust their salvation to him?

Since Father Rentería neither deals with the problems of his village nor uses his prestigious spiritual position to help the poor, he is useless and ineffective in his office as priest of Comala. Ironically, he realizes that his actions have been far from honorable. He understands that he holds a double standard in his treatment of the affluent and of the indigent. He knows that his own cowardice kept him from offending those who sustain him and that he is to blame for the desperation of Comala's believers. This awareness keeps him awake at night.

'Todo esto que sucede es por mi culpa... El temor de ofender a quienes me sostienen. Porque ésta es la verdad; ellos me dan mi mantenimiento. De los pobres no consigo nada; las oraciones no llenan el estómago... Y éstas son las consecuencias. Mi culpa.

He traicionado a aquellos que me quieren y que me han dado su fe y me buscan para que yo interceda por ella para con Dios' (91)².

However, his remorseful feelings do not change the miserable reality of Comala's inhabitants. His personal acknowledgement of his guilt is worthless because he never changes his actions. Father Rentería has the power to give pardon and he refuses to grant it to those who need it the most. In his analysis of the desperation of Comala, Thomas C. Lyon considers Father Rentería's culpability and also notes that the priest's own overwhelming feelings of guilt actually contribute to his impotency. Truly, his own sin, perhaps the most serious of all, paralyzes him the most.

Yet in this state of paralysis to help the poor, Father Rentería continues to support those who have money. For example, when Miguel Páramo dies in an accident and is being buried in Comala's church, Father Rentería initially denies pronouncing the final blessing at the close of the mass, remembering how the criminal youth killed his brother, raped his niece, and harmed many others in Comala. He considers Miguel for what he is worth—a bad man who neither deserves his prayers nor his blessing (Rulfo 86). Nevertheless, when Pedro Páramo requests such pardon for his son and gives the priest several gold coins as a donation to his church, Father Rentería reconsiders his stance. Although he prays for Miguel to be condemned in eternity, he ultimately gives him his blessing. Rafael Hernández –Rodríguez comments on the priest's role in the disintegration of his community, noting that the priest patiently accepts the destruction of his parish, while submitting to the power of Pedro Páramo and blessing precisely the one person who injured his own family the most. This submission and pardon are not done out of humility or goodness of heart, but rather out of his own convenience and cowardice (632). Father Rentería, thus, chooses to bless based on his own self-interests, rather than the interests of the church.

In order for a church or, in fact, any other institution to be effective, it must have a strong leader. If Father Rentería is so weak, then how can Comala's inhabitants have faith and understand the message of love that is essential to their religion? According to the beliefs of the church, the kingdom of God is for the poor, the meek, for those who have no glory of their own on the earth. The function of the church as an establishment is to make available the free gift of salvation and the guarantee of eternal life, which comes through Jesus Christ. Yet Father Rentería, paralyzed by his desires for his own physical and financial security, does not make the church's purpose his priority.

Without the assurance of this salvation in a society that puts so much emphasis on religion, what is the worth of the lives of the poor in Comala? What have they to live for? They are all so encumbered by the weight of their sins, yet they cannot find any way to free themselves from their burdens. The Catholic church in Comala does not make relief available to these suffering souls because Father Rentería denies their salvation through the washing of their sins on earth and the guarantee of eternal life. Thus, the church itself becomes a legalistic institution where love, hope, and peace cannot abide because they are silenced by the priest's fears and by his greed. Instead of finding fellowship and happiness, Comala's believers only find themselves increasingly isolated from God, the church, and from one another. No sense of community and communion is present among them. Octavio Paz concludes his analysis of Mexican identity noting that a sense of community and communion are what resolve feelings of loneliness and of sin. "*Soledad y pecado se resuelven en comunión y fertilidad*" ("La dialéctica..." 191). However, the feeling of isolation that Comala's "transgressors" experience cannot be resolved by a priest's blessing, but rather through a radical alteration in the church's

function.

Instead of focusing solely on joy and salvation in eternal life, the church has the obligation to help the poor in the present world. The Christian shows his love for God when he defends and helps the poor, the widows, and the orphans, and stands for justice. When speaking of the kingdom of God, Christ explains that only those who give food to the hungry, drink to the thirsty, and clothes to the destitute; who take in strangers, care for the sick, and visit the imprisoned—only they will enter His kingdom (Matthew 25:35,36). In Matthew 25:40, He says, “I tell you the truth, whatever you did for one of the least of these brothers of mine, you did for me.” Father Rentería, the representative of Comala’s church, ignores the importance of these teachings and therefore prompts those of his parish to choose sin as a form of self-help in the present world since they do not receive support from the church.

All in all, the church in Comala does not offer any form of spiritual or physical support to its believers and, literally, abandons them. Father Rentería does not show the love and compassion of God to his parish; therefore, the inhabitants grow disillusioned with the faith. Instead of finding a caring community in the church, the marginalized only arrive to feel more and more alienated. Comala’s inhabitants remain so hopeless because the only institution that could change their misery does nothing, and not out of ignorance, but out of its own cowardice and greed.

Notes

1. Heaven is so high, and my eyes so without vision, that I am happy simply knowing I am here on earth. Moreover, I lost all my interest when Father Rentería assured me that I would never know Heaven... when one door closes and the only one left open is to hell, it is better to never have been born... Heaven for me, Juan Preciado, is here where I am now (124).
2. All that has happened is my fault... The fear of offending those who sustain me... Because this is the truth: they give me my maintenance. I get nothing from the poor; their prayers don’t fill the stomach... And these are the consequences. My fault. I have betrayed those who love me, have given me their faith and look for me so that I might intercede on their behalf (91)

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Evolution of an Explanation: Changes in the Interpretation of the League of Nations Rejections

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For over eighty years historians have attempted to explain the reasons behind the United States defeat of the Treaty of Versailles and thus the League of Nations. Since their earliest publications, the historians' interpretations have been evolving, varying not only from author to author but also growing in complexity. This evolution has occurred not only in explaining the reason, but also in the detail of explanation about the opposition. The lack of agreement among historians and the different interpretations of the reasons for the defeat of the Treaty of Versailles have led this subject to be one of great controversy even today, over eighty years after its defeat.

Examining a topic such as the defeat of the League of Nations through the eyes of the historians who have studied it provides a window into how historical interpretation can evolve. As all works on the subject tend to rely on the same sources, it is not so much an evolution in the thought surrounding the League fight, as it is a constant reinterpretation of the sources, as the foundation for each argument continues to draw from the same primary sources.

By looking specifically at the work of historians with a connection to World War II, it is seen how a major event can have an impact and create bias on the interpretation of history. The works that follow the World War II generation show how distance from an event can remove the bias that such an event can cause. Therefore it is important to not ignore works that are believed to carry bias, but rather to combine them with those that follow, to see how the original works have been built upon.

To make an examination of the many interpretations behind the defeat of the League of Nations it is important to give a brief background into both the League itself and those that played a major role in the fight for the League.

The year 1919 marked the beginning of the Paris Peace Conference that would officially end World War I and lead to the Versailles Peace Treaty. American President Woodrow Wilson had elected to attend the conference as the United States representative and took with him his plan for continual peace, his "Fourteen Points." To President Wilson the most important of the fourteen points was the League of Nations. The League of Nations was to be an organization composed of nations that would guarantee the security of the world against aggressive governments. The goals of the League would be to reduce armaments around the world, settle disputes between countries, and to maintain living conditions throughout the world.

Returning to the United States with the completed Treaty of Versailles, President Wilson's next task was Senate approval. When the treaty was reviewed in the Senate it did not gain the support of the controlling Republican Party. The most influential member of the Republican Party was Senate Majority Leader Henry Cabot Lodge. To gain approval of the League of Nations, the Versailles Treaty as a whole had to be approved, and the Senate wanted to make amendments to the treaty before approving it.

The ensuing fight, both for and against the Treaty of Versailles is what has been left to interpretation by historians. The post-World War II frustration at the Treaty's failure found

historians directing blame at the ineffectiveness of President Wilson.⁶ The 1950s brought forward a multitude of interpretations to the defeat of the treaty, including Henry Cabot Lodge as sole culprit⁷ and the willingness of the American people to accept a greater role in foreign affairs.⁸ In the 1960s historians looked to the American shift towards isolationism as the potential cause for the League's failure.⁹ The 1980s saw a resurgence in the historical study of the League fight. Here historians addressed many of the interpretations that arose out of the previous decades, while also bringing forth their own interpretations, such as the belief that it was the American people who could not agree on a league that they liked¹⁰ and a renewed look at President Wilson as the guilty party.¹¹ The most recent works have produced ideas such as President Wilson as the source of Republican party reunification leading to the role that party unity¹² would play in the League fight, and the idea that no one person's actions or central issue can explain the League's failure.¹³

The year 1945 marked the end of the Second World War; and America looked to move forward from the great struggle it had just completed. The scale of World War II had surpassed even that of World War I and had left historians looking back with a harsh eye on the events of the past, trying to find an explanation for the most recent world war. Among the subjects that historians targeted was the failure of the United States to sign the Treaty of Versailles and thus not to join the League of Nations.

As historian Herbert Margulies points out, "A "what if" question is unanswerable, but when it is about something that is very important, it persists."¹⁴ Not knowing what the impact of signing the Treaty of Versailles would have been for the United States or the world as a whole, it did not deter the persistence of targeting this event as a possible cause to the world's most recent tragedy.

The 1945 publication of *Woodrow Wilson and the Great Betrayal*, by Thomas A. Bailey introduces President Woodrow Wilson as the person solely responsible for the failure of the League of Nations. As Bailey narrates the fight for and against the League of Nations, his bias of looking for someone to blame for the League's failure arises in his overwhelming criticism of President Wilson. Although Bailey gives ample reasoning for many of the actions, or rather inactions, of President Wilson, he shows a clear belief that it was the president's inability to compromise that led to the defeat of the League of Nations.

When discussing the role of politics, Bailey notes that "partisanship in some degree could

⁶ Thomas A. Bailey, *Woodrow Wilson and the Great Betrayal* (New York: The Macmillan Company, 1945) vi.

⁷ John A. Garraty, *Henry Cabot Lodge A Biography* (New York: Alfred A. Knopf, 1953) 356.

⁸ Arthur S. Link, *Wilson the Diplomatist: A Look at his Major Foreign Policies* (Baltimore: The Johns Hopkins Press, 1957) 128.

⁹ Selig Adler, *The Isolationist Impulse: Its Twentieth Century Reaction* (New York: Collier Books, 1961) 93.

¹⁰ William C. Widenor, *Henry Cabot Lodge and the Search for an American Foreign Policy* (Berkeley: University of California Press, 1980) 268.

¹¹ Lloyd E. Ambrosius, *Woodrow Wilson and the American Diplomatic Tradition: The Treaty Fight in Perspective* (New York: Cambridge University Press, 1987) xiii.

¹² Karen A. J. Miller, *Populist Nationalism: Republican Insurgency and American Foreign Policy Making, 1918-1925* (Westport, Connecticut: Greenwood Press, 1999) 53.

¹³ John Milton Cooper, jr., *Breaking the Heart of the World: Woodrow Wilson and the Fight for the League of Nations* (Cambridge: Cambridge University Press, 2001) 3.

¹⁴ Herbert F. Margulies, *The Mild Reservationists and the League of Nations Controversy in the Senate* (Columbia: University of Missouri Press, 1989) ix.

not have been kept out,”¹⁵ but in describing the negative impact of partisanship, he tells of the numerous failures of President Wilson. This included Wilson’s failure to denounce rumors of seeking a third term, not appointing Republicans to prominent positions on the peace council, and the failure to seek advice from the Senate as a whole in the peace process.¹⁶

The reservations that the Republicans under Senator Henry Cabot Lodge proposed were acceptable in the eyes of Bailey. He saw them as a natural part of the “American way of resolving deadlock by compromise.”¹⁷ By not budging on a single reservation, President Wilson placed himself and his ideas ahead of the greater good of the United States.

Thomas Bailey’s argument against, and blame of President Wilson illustrates the trend of historians during this period. The desire to find the cause of World War II prompted the 1953 release of John Garraty’s *Henry Cabot Lodge a Biography*. Switching from President Wilson to Senator Lodge, Garraty follows a similar pattern to Bailey in the search for reason for World War II.

The absence of an unbiased and respected biography of Senator Henry Cabot Lodge motivated John Garraty to produce *Henry Cabot Lodge a Biography*. As Garraty states, “I have not hesitated to praise Lodge where I have thought him worthy; neither have I refrained from condemnation when that seemed proper.”¹⁸ It is with this approach that he examines the life of Henry Cabot Lodge. In context to Lodge’s role in the fight against the Treaty of Versailles, Garraty paints a picture of a man of strong convictions, who would not allow the strength and role of the United States Senate to be changed¹⁹ and who believed that “the success of the Republican Party was of paramount importance.”²⁰

In telling the narrative of the League fight, Garraty portrays President Wilson and Senator Lodge as two men who had no trust and little respect for one another. As Garraty points out, Lodge was “always suspicious of Wilson,”²¹ and the fact that the League was created by President Wilson “was of unquestionable significance in explaining Lodge’s resistance to it.”²² Lodge’s ill will and distrust of the President carried over in his dealings with fellow Republican senators who represented a wide spectrum of beliefs on the League of Nations. As Garraty explains, Lodge effectively impressed upon his Republican colleagues that President Wilson was not someone to be trusted and as the League was the product and chief goal of the president; it too was not to be trusted.

It is here that Garraty makes his most bold claims, as he suggests that although Senator Lodge believed that a League was “a desirable thing, he was unwilling to devote himself to positive action toward creating a workable one.”²³ Garraty seems to believe that the reservations that Senator Lodge proposed for the League of Nations were of little importance and were not an actual effort to reach compromise. Garraty attempts to prove his point by addressing the strategy of Senator Lodge, specifically that he would place himself in a position to agree with a league but at the same time directly place himself as a partisan politician against the League of Nations.

¹⁵ Bailey 41.

¹⁶ Bailey 43-51.

¹⁷ Bailey vi.

¹⁸ Garraty vii.

¹⁹ Garraty 356.

²⁰ Garraty 356.

²¹ Garraty 357.

²² Garraty 355.

²³ Garraty 358.

Garraty believes that “Lodge preferred a dead league to the one proposed by Wilson.”²⁴

In contrast the 1957 release of Arthur Link’s *Wilson the Diplomatist* marked the first work to take into account multiple issues behind the League’s failure and place them in a broader view. *Wilson the Diplomatist* would be just the first part of Link’s life-long research into President Wilson making him the eminent source on Woodrow Wilson.

Taking a broader view than previous historians, Link’s *Wilson the Diplomatist* engages a number of the issues surrounding the failure of the United States to join the League of Nations. Agreeing with earlier findings that the stubbornness of President Wilson and Senator Lodge played a key role in the result of the League fight, Link goes further to state that it was the American people who were not ready to assume the role that the League of Nations would have placed them in.²⁵

Touching on the idea that President Wilson was unwilling to compromise, Link looks at the issue of his 1919 stroke and how this may have played a role. He suggests that there is a possibility that his illness may have “dethroned his reason”²⁶ in regards to accepting the reservations being put forward by Senate Republicans. However, Link believes that it was simply a matter of President Wilson truly believing in the League that he had crafted as the only viable solution to the world’s problems.

The differing beliefs between President Wilson and Senator Lodge, about the role that the United States should play within the League ultimately led to its rejection. Link states that it was a debate between two ideas, that “the United States would take leadership in the League of Nations without hesitations and reservations”²⁷ or to “join the League grudgingly and with no promises to help maintain universal collective security.”²⁸ President Wilson believed that agreeing to the latter would only lead to the failure of the League in its goals to maintain security in the world.

It is Link’s contention that the “American people were not prepared in 1920 to assume the world leadership that Wilson offered them.”²⁹ Link argues that it was not just the actions of two men that kept the United States out of the League, and that if the American people as a whole had believed in and wanted the responsibility, then it would have been so. President Wilson had demanded “greater commitment, sacrifice, and idealism than the people could give.”³⁰

The ideas that emerged from the 1940s and 1950s were those of the World War II generation. These men had a desire to give reason to the tragedy that they had experienced firsthand. The generations of historians to follow them had the luxury of placing themselves outside of the horrors of World War II. As future historians were at most children during World War II they found themselves with a freedom that those before did not have, a freedom that allowed them to explore the many issues surrounding the League fight without a desire to place blame.

Building on the ideas laid out by Arthur Link, Selig Adler describes an America that is moving towards isolationism in his 1961 book *The Isolationist Impulse*. Reflecting on the challenges and compromises that President Wilson was forced to deal with at the Paris Peace

²⁴ Garraty 363.

²⁵ Link 155.

²⁶ Link 154.

²⁷ Link 154.

²⁸ Link 154.

²⁹ Link 155.

³⁰ Link 156.

Conference, Adler discusses how Wilson's liberal supporters abandoned him and allowed for the failure of the League of Nations while also drawing America back to a time of isolationism.

Adler lays out in great detail the complexities that President Wilson faced while negotiating at the Paris Peace Conference. Because the United States is a nation of immigrants, and predominantly European immigrants, arguing in favor of against the desires of the European nations gave way to backlash in America. Being conscious of the desires of the other negotiating nations, President Wilson knew that he could not fight for every provision of his "Fourteen Points." As a result he focused his energies on, above all else creating the League of Nations. In order to do this the President was forced to allow for many of the reparations that he had once condemned. Accepting these reparations further infuriated his liberal base in the United States. Already against the war, these liberals saw little reason to support the president's peace plan and found themselves allied with other anti-league senators.³¹ The most ardent anti-league senators also reflected the ideas of isolationism, and thus brought the liberals into their isolationist fight.³²

The loss of liberal support is only one aspect of why Adler believes the League of Nations failed to gain approval; he goes on to echo the idea of Arthur Link that "Americans had soon wearied of saving the world. The trials and tribulations of war and the frustrations of peacemaking had dissipated the spell of idealism."³³ Adler demonstrates that the end of the war and the return of the soldiers saw a rise in the middle class and with it a desire for the "good old days" of isolationism.³⁴ Americans wanted to "shake off" responsibility.

Contrary to Selig Adler's isolationist ideas, William Widenor brings the argument back to partisan politics in examining the actions of President Wilson and especially Senator Lodge in his 1980 book *Henry Cabot Lodge and the Search for an American Foreign Policy*. Once again the narrative of the League fight is told. In this instance Widenor focuses on Senator Lodge's party loyalty as a cause for the rejection of the League of Nations, yet at the same time he presents a book that shows little bias for or against Senator Lodge.

In his narrative of the League fight, Widenor provides many of the key actions taken by Senator Lodge but he does so in a way that shows both Lodge the politician and Lodge the statesman. By not only focusing on what Senator Lodge did to obstruct the League, but also on Lodge's own personal beliefs, Widenor provides a clearer picture into the actions that the Senator took. Not shying away from the fact that Lodge supported a league to insure world security, Widenor allows for the discussion of what Senator Lodge envisioned.

Widenor gives great detail into the actions that Senator Lodge took to gain and maintain the loyalty of all factions of Republicans in the Senate. Senator Lodge found a way to gain the support of both anti-league and pro-league Republicans. Gaining this support gave Lodge the ability to achieve what Widenor calls his twin goals: "the preservation of unity among Republicans so that the "Wilsonian" party might be driven from office and the rejection of the Wilsonian version of the peace settlement and its replacement by the Lodge version."³⁵

The description and interpretation of Senator Lodge's actions shows the partisanship that the Senator created while also explaining its purpose. Widenor shows that Lodge "had the prescience to foresee the attitude which his countrymen would eventually assume."³⁶ Widenor's book shows a continuing evolution of the earlier ideas of Thomas Bailey and John Garraty. He

³¹ Adler 57.

³² Adler 58.

³³ Adler 90.

³⁴ Adler 91.

³⁵ Widenor 322.

³⁶ Widenor 352.

sees the actions of both Wilson and Lodge but provides a distanced evaluation of both men that is lacking in the earlier works of Bailey and Garraty.

Building on the idea of partisan politics and their influence on the League of Nations is Karen Miller's 1999 book *Populist Nationalism*. Miller shows that it was the importance of unity among the Republican Party that would lead to the League's rejection. Being divided between loyal Republicans and Progressives in the election of 1912, the Republican Party "committed themselves to party reconciliation,"³⁷ before, during, and after the League fight.

Telling the narrative of the reconciliation of the Republican Party from 1918-1925, Miller shows in detail the dealings within the Republican Party during the League fight and the effects it had on the outcome. For the Republican Party, the Versailles Treaty became the unifier that they had been searching for since the division of 1912. Miller argues that Henry Cabot Lodge, as the Senate Majority leader, saw the opposition among all factions of the Republican Party and knew that the treaty debates "could provide the conclusive step in healing the wounds of the 1912 election."³⁸ According to Miller, it was the opinion of many high-ranking Republicans to support the League of Nations in a revised form.³⁹ But it was their desire for party reunification that overwhelmed their personal opinions of the League.

Entering into the 21st century John Milton Cooper wrote a detailed account of the League fight in his 2001 book *Breaking the Heart of the World*. In his book Cooper gives credit to all previous interpretations of the League fight, acknowledging the evidence for each argument and showing how each one played a part in the rejection of the League.

By focusing his entire book on the fight for and against the League of Nations, Cooper has the ability to devote the needed time that previous books of a broader scope were unable to give. Cooper's work focuses only on the issue of the League of Nations fight and allows it to be dissected and examined in great detail.

Cooper's book touches on the issues of President Wilson's role in the League fight, his stubbornness and poorly planned League fight strategy,⁴⁰ the sudden stroke of the president in 1919,⁴¹ executive versus legislative control of American foreign policy,⁴² the isolation movement,⁴³ and what Cooper calls "the most frequently deplored feature – partisanship."⁴⁴

By exploring a multitude of issues, Cooper presents a well-rounded argument that shows the true complexities of the League fight and its rejection. Cooper further enhances the credibility of his argument by pointing out both positive and negatives in regards to previous arguments. In regards to the idea of partisanship, Cooper states that because of the two party system of the United States "some degree of clash over these big issues was probably unavoidable."⁴⁵ Cooper for the most part disregards the idea of isolationism as a major cause but did state that involving isolationist views in the League fight allowed for "the cultivation of promising future constituencies for isolationist policies."⁴⁶

The argument of who should control American foreign policy is laid out as the main

³⁷ Miller x.

³⁸ Miller 55.

³⁹ Miller ix.

⁴⁰ Cooper 2.

⁴¹ Cooper 3.

⁴² Cooper 4.

⁴³ Cooper 5.

⁴⁴ Cooper 6.

⁴⁵ Cooper 6.

⁴⁶ Cooper 5.

contention according to Cooper. President Wilson's decision to not include the legislature in the earliest parts of the treaty process left him at a disadvantaged position during the League fight. Wilson's actions had left the entire Republican Party united against him and working to place their ideas into President Wilson's peace treaty.

Cooper shows that so much bitterness had developed between the two men that neither one was willing to bend on any issue surrounding the Versailles treaty. Both men believed it was time for "the other side to concede."⁴⁷

Cooper's exploration of the multiple issues regarding the League fight shows the overwhelming complexity of the League fight issue. By giving relevance to each explanation and showing how each explanation correlates to other explanations, Cooper provides the most complete look at the League fight.

The evolution of the interpretations of the failure of the League of Nations exemplifies the importance of continued historical study and examination. The earliest interpretations showed the effects of personal bias based on the effects of world events, while time and the use of these early works have allowed historians to continue to build upon the earlier work and to expand on the ideas presented within them.

From the earliest works that presented biased, narrow reasons for the League's failure, to the most recent broad and detailed examinations of the League fight, the issue of why America would not approve the Treaty of Versailles has not lost its place among the great American controversies. Inspiring generation after generation to reexamine the sources and come up with their own reasons, the League fight shows how early historical interpretation should not simply become accepted as fact and should be challenged and reexamined to build upon the findings of others.

⁴⁷ Cooper 283.

Differentiation of Embryonic Stem Cells into Oligodendrocytes

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Abstract

Multiple sclerosis (MS) is an autoimmune disease of the central nervous system (CNS) in which the body's immune system launches a defensive attack against the nerve-insulating myelin produced by oligodendrocytes. There is no cure for this debilitating disease. The transplantation of glial cells derived from embryonic stem cells (ESCs) into the CNS is a promising approach to treat myelin disorders including MS. ESCs derived from the inner cell mass of the blastocyst have the ability to give rise to any type of cell in the body including oligodendrocytes. *In vitro* neural differentiation of mouse embryonic stem cells (mESCs) often yields a mixed culture of astrocytes, neurons, and oligodendrocytes. We investigated the process of *in vitro* differentiation of mouse ES cells into oligodendrocyte progenitors. mESCs were cultivated to form embryoid bodies (EBs), when incubated for three days in suspension containing growth medium. The EBs are aggregates of differentiated and undifferentiated cells. The EBs were treated with retinoic acid to induce differentiation. The experimental results showed that the differentiation of mESCs into oligodendrocytes was facilitated by selective treatment with ascorbic acid and triiodothyronine (T3). The differentiated oligodendrocytes had characteristic morphology and expressed oligodendrocyte-specific markers such as O-4, and 2', 3'-cyclic nucleotide 3'-phosphodi-esterase. mESC-derived oligodendrocytes proliferated and colonized seeded biodegradable scaffolds fabricated using polycaprolactone and polyethylene oxide. Further studies are underway to characterize the scaffold grown oligodendrocytes and their potential to grow *in vivo* and to repair or regenerate myelin defects in a mouse model system.

Introduction

Many diseases of the central nervous system (CNS) result in damage to or destruction of the myelin sheaths of nerve fibers. Loss of myelin disrupts the transmission of the nerve impulses through the demyelinated segment of a neuron. This produces serious functional consequences in the CNS. Multiple sclerosis (MS) is one of the most common causes of chronic neurological disability in young adults. There are approximately 350,000 people with MS in the USA. (1). Many of the CNS disorders are implicated in demyelination of intact axons (2-5). Oligodendrocytes, also known as oligodendroglia, are a class of cells in the CNS known as glial cells. Damage to one oligodendrocyte, therefore, can result in a loss of myelin in many axons (6). When parts of the myelin sheath are lost, oligodendrocytes attempt to replace them. However, in MS, it appears that the oligodendrocytes themselves are often destroyed, thus compromising the repair process (7). Myelination of the central nervous system may be achieved by transplantation of glial cells. It is considered that ESCs or ESC-derived progenitors have a greater potential to myelinate after transplantation than mature glial cells (8, 9). Thyroid hormone, T3 (Fig. 1b), plays an important role in oligodendrocyte development. T3 has been shown to increase cell proliferation, myelin gene expression and the survival of developing oligodendrocytes (10). Studies on dorsal root ganglia cultures treated with ascorbic acid (Fig 1a)

have presented a greater abundance of myelinated fibers than those cultured in the absence of ascorbic acid (11).

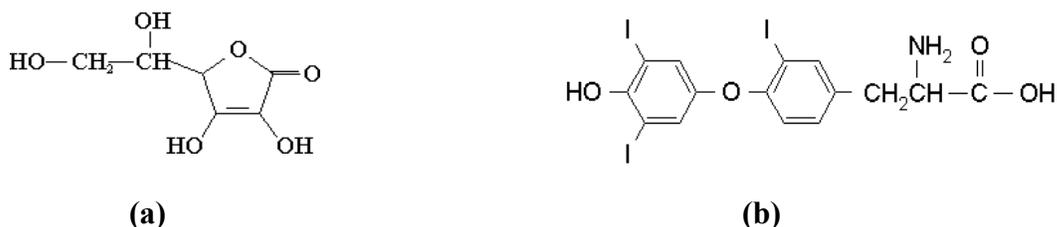


Figure 1. Molecular structures of Ascorbic acid (a) and 3, 3', 5'-Triiodo-L-thyronine (b).

We have conducted studies to achieve: a) neural differentiation of mESCs and selective enrichment of oligodendrocyte progenitors; b) optimum growth through biodegradable scaffolds, c) transplantation of oligodendrocytes in a mouse model through biodegradable scaffolds to demonstrate *in vivo* development. Oligodendrocyte-specific genes such as O-4, mbp (myelin basic protein), olig1, 2', and 3'-cyclic nucleotide 3'-phosphodiesterase have been used as molecular markers to characterize the neural cells. The use of ESCs to derive a selective lineage of oligodendrocyte progenitors is a promising approach to identify pathways in the myelination processes and to replace and repair the damage done at the site of MS lesions.

Materials and Methods

Media and Cell Culture Conditions

Mouse ESCs (D3) were grown in Dulbecco's modified Eagle's medium with 10 % fetal bovine serum, 0.1 mM 2-mercaptoethanol (Sigma), and 5.6% of the supplement (gentamicin, 0.1%, streptomycin, 0.2% and penicillin, 0.12%) (DMEM) (12). The DMEM was supplemented with 1,000 U/ml of leukemia inhibitory factor (LIF; Chemicon International Inc.) for mouse ESCs growth. The mouse ESCs were grown to 75% confluency in 25 cm² flasks under optimal growth conditions. Subsequently, these cells were harvested by trypsin treatment and counted using a hemacytometer.

Preparation of Embryoid Bodies

The mESCs were harvested after treatment with 0.1%/1 mM trypsin/EDTA and transferred to plastic Petri dishes. The use of hanging drops allows cell aggregation and prepare mouse EBs. The mouse EBs were then plated in culture medium and treated with retinoic acid for 3 days before transferred into a selective enrichment medium (30nM triiodothyronine (T3) + 10mM ascorbic acid + DMEM).

Microscopic Studies

The mESCs and their derivatives were used to seed 3-D biodegradable scaffolds (12) in the appropriate media and were examined by light microscopy (LM), transmission electron

microscopy (TEM) and scanning electron microscopy (SEM).

Immunohistochemistry Studies

After being subjected to chemical treatment the ESCs were analyzed for differentiation into various lineages using antibodies against various cell specific markers such as O-4 anti-mouse (primary antibody) from Chemicon and goat anti-mouse conjugated to Alexafluor (secondary antibody) five days after inoculation.

Differentiation of mEBs to Oligodendrocyte Progenitors

The EBs were treated with cis-retinoic acid to induce differentiation and then incubated in the selective enrichment medium containing 30mM triiodothyronine (T3) and 10mM ascorbic acid. The medium was changed every other day for ten days.

Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR)

To study the expression of oligodendrocyte specific markers, the EBs and cells were harvested and the messenger RNA (mRNA) was isolated (Rneasy, Qiagen). The isolated mRNA was amplified by one step RT-PCR (Qiagen) and analyzed using agarose gel electrophoresis.

***In vivo* Growth of mESCs and mESC-derived Oligodendrocytes**

The mice (three weeks old) were implanted with 5000 oligodendrocytes grown in culture seeded scaffolds, subcutaneously in the thighs and spinous processes (Table1). The culture medium or unseeded scaffolds were implanted as the experimental control. The implanted cells and scaffolds were surgically removed after 4 weeks of implantation. Cells and scaffolds were analyzed using cell culture, microscopic and molecular biology techniques.

No.	Treatment	Site of Implantation
1	Oligodendrocytes injected subcutaneously.	thighs
2	Oligodendrocytes injected subcutaneously.	spinous processes
3	Oligodendrocyte-seeded scaffold injected subcutaneously.	thighs
4	Oligodendrocyte-seeded scaffold injected subcutaneously	spinous processes
5	Culture medium injected subcutaneously.	thighs
6	Culture medium injected subcutaneously.	spinous processes
7	Unseeded scaffold injected subcutaneously.	thighs
8	Unseeded scaffold injected subcutaneously.	spinous processes

Table 1. This is the implantation design showing the experiments and controls per mouse totaling 8 mice.

Results and Discussion

Differentiating mESCs into Oligodendrocytes

The mESCs grown using the standard culture conditions were developed into characteristic embryoid bodies (EBs) when incubated as hanging drops. Culturing of these EBs generated differentiated cells of several lineages. Treating EBs with cis-retinoic acid and culturing them in the normal mESC medium (lacking LIF) induced differentiation into neural and osseous types of cells. However, when cis-retinoic acid treated EBs were cultured in the same medium containing T3 and ascorbic acid they differentiated into oligodendrocytes. Under these culture conditions oligodendrocytes were detected as early as three weeks of culturing the EBs. However oligodendrocyte progenitors were not observed after 5 weeks of incubation of the EBs in the selective enrichment medium containing T3 and ascorbic acid. Repeated changes of the selective medium and sub-culturing yielded an enriched culture of oligodendrocytes. In order to investigate the progression of the EBs differentiation light microscopic observations were performed on a daily basis. Microscopic analysis showed that ESCs (Fig. 1) differentiated into a well-developed cellular morphology similar to that characteristic of oligodendrocytes (Fig. 2).



Figure 2. Light micrograph of a mESCs colony 2 days old (100X).

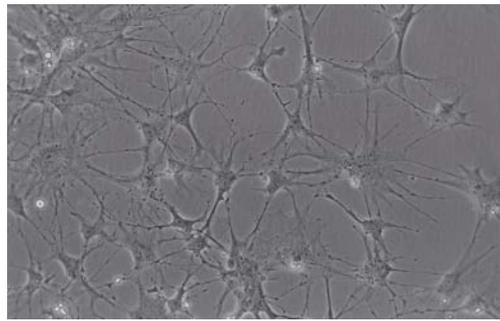


Figure 3. Light micrograph of oligodendrocytes, after 5 days of growth on selective enrichment medium (100X).

Characterization of mESC-derived oligodendrocytes

In order to further investigate the ESC differentiation into oligodendrocytes immunohistochemical analysis was performed. These studies showed that a specific cell surface antibody (anti-O-4) reacted with the oligodendrocytes but not ESCs (Fig. 4 and 5). Fig. 5 also showed the characteristic morphology of oligodendrocytes as visualized by immunohistochemical analysis.

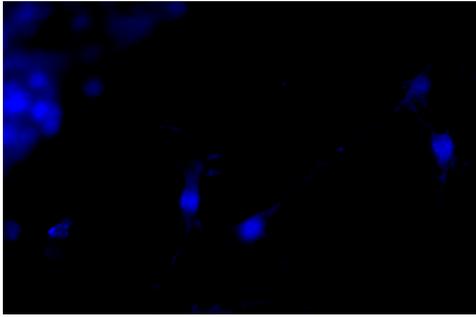


Figure 4. Immunofluorescent micrograph of oligodendrocytes using nuclear stain DAPI (blue). This counterstain locates nuclei. Oligodendrocytes were grown on a Lab-Tek slide for three weeks before being processed (200X).

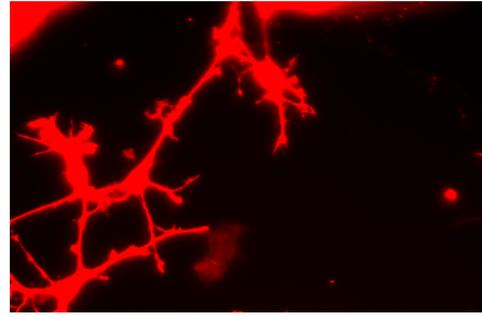


Figure 5. Immunofluorescent micrograph of oligodendrocytes stained with O-4 primary antibody (against oligodendrocytes) conjugated to secondary antibody Texas Red (200X).

Electron microscopic studies showed that the ESC-derived oligodendrocytes had well developed organelles and a large cytoplasm, unlike ESCs (Fig. 6). The seeded scaffolds analyzed by scanning electron microscope showed extensive cell growth covering almost the entire scaffold (Fig. 7).

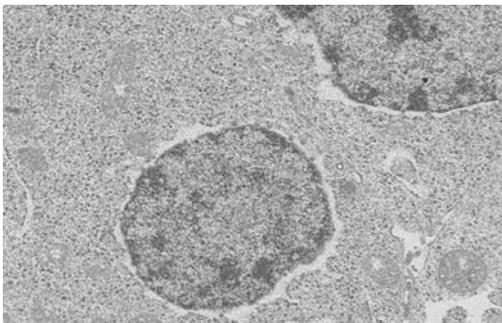


Figure 7. Scanning electron micrograph of oligodendrocyte growth on seeded scaffold after 6 weeks of incubation.

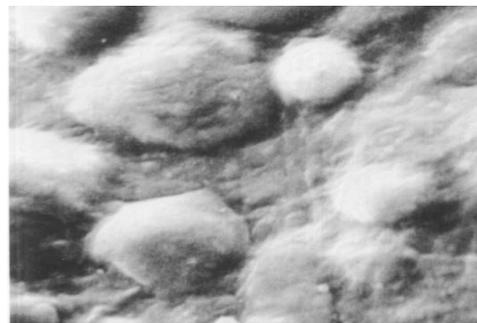


Figure 6. Transmission electron micrograph of oligodendrocytes mitochondria, the nucleus and the DNA material within the nucleus can be observed.

The mRNA isolated from oligodendrocytes grown in 3-D biodegradable scaffold expressed oligodendrocyte-specific genes, mbp, olig1 and 2, 3'-cyclic nucleotide 3'-phosphodiesterase. The mESC expressed alkaline phosphatase but not mbp, olig1 and 2, 3'-cyclic nucleotide 3'-phosphodiesterase.

***In Vivo* Studies**

In vivo transplantation of the cells and seeded scaffolds showed proliferation of oligodendrocytes in mice spinous processes and thighs, as judged by the analysis of the biopsies. Oligodendrocyte-seeded scaffolds were not rejected in mice. Further analysis of cells extracted from the site of implantation showed a mixture of cell cultures including oligodendrocytes.

Our studies showed the differentiation of ESCs into neural progenitors that further differentiated into a pure culture of oligodendrocytes *in vitro*. Oligodendrocytes were shown to colonize and expand when seeded into the biocompatible and biodegradable scaffolds. Molecular analysis showed that the cells colonizing the scaffolds expressed oligodendrocyte specific markers. Based on our initial findings we concluded that the enrichment and expansion of oligodendrocyte progenitors can provide a good source of oligodendrocytes for tissue transplantation therapies.

ACKNOWLEDGEMENTS

This study was supported by the College of Arts and Sciences, Oakland University and Michigan Research Excellence Fund. The authors wish to thank Ms. L. T. N. Dang for the TEM and SEM work and Dr. Dong Yao for designing and the fabrication of the scaffolds.

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Exploring Imagery in Emily Dickinson's Correspondence with Elizabeth Holland

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The correspondence between Emily Dickinson and Elizabeth Holland is one of the most significant communications Dickinson scholars have. These letters are opulent with imagery, and Alfred Habegger testifies in his biography of Dickinson: "Emily's letters to [Holland] are full of ecstatic springtime dispatches: 'The Wind blows gay today and the Jays bark like Blue Terriers'" (Habegger 512-13). There is an explosion of clover imagery in Dickinson's letters and poems after her father, Edward Dickinson, died. This icon of the clover precisely relates to Elizabeth Holland, who, according to her granddaughter, "paid her respects to Mr. Dickinson at a later time by a visit to the cemetery, from which she brought Emily a clover from his grave. A spray of clover, with several leaves and heads of bloom, which is almost safe to assume to be the one that passed from Mrs. Holland's hand to Emily's, still lies pressed between the pages of her Bible" (Ward 102).

Emily Dickinson never attended her father's funeral or went to visit his grave. Although "the death of her father in 1874 was the first and most important" (Pollak 52) of a succession of overwhelming deaths later in her life, Dickinson feared the publicity such a communal event would force upon her. "Emily did not attend the funeral, or greet guests, or participate in any public way in honoring the man" (Pollak 53), and instead suffered alone. Alone, that is, until Elizabeth Holland called with the spray of clover. Through Elizabeth Holland, Emily Dickinson began to cope with her father's demise. The isolated clover sprig must have satisfied Dickinson with a visualization of her father's tomb, because long after all publicity surrounding his sudden death ceased, she still never paid her respects.

Dickinson writes to Holland, "Thank you for the Affection. It helps me up the Stars at Night, where as I passed my Father's Door - I used to think was safety. The Hand that plucked the Clover - I seek, and am Emily" (L 432). The protection and strength Dickinson formally received from her father is lost, and she turns to Elizabeth Holland to unearth it once again.

Peculiarly enough, little seems to be written about the Dickinson/Holland relationship, except to recognize that it was "one of the closest, longest lasting, and least understood friendships" (Habegger 308). Most scholars conclude that Holland was a main figure in Dickinson's life, and many consider Holland the most significant female figure outside of the immediate family. There can be no doubt that the correspondence was an intimate one where Dickinson "overcame much of her natural reticence and took unusual risks with this correspondent. Daring to think aloud, she confided her joys, worries, doubts, and disappointments more freely in this epistolary friendship than in most other correspondences" (Tingley 144). Dickinson herself views Holland as a major source of power; Dickinson writes: "Smaller than David you clothe me with extreme Goliath" (L 318).

Thomas Johnson believes that Emily Dickinson composed over ninety full letters to Elizabeth Holland before the time of her death. Of these, sixteen include bird images, twenty-two contain flower images, and fifteen employ both flower and bird images within the letter. After her father's mortality, the flower imagery in her letters to Mrs. Holland increases substantially and for a great period, while the bird imagery recedes, only to rematerialize slowly.

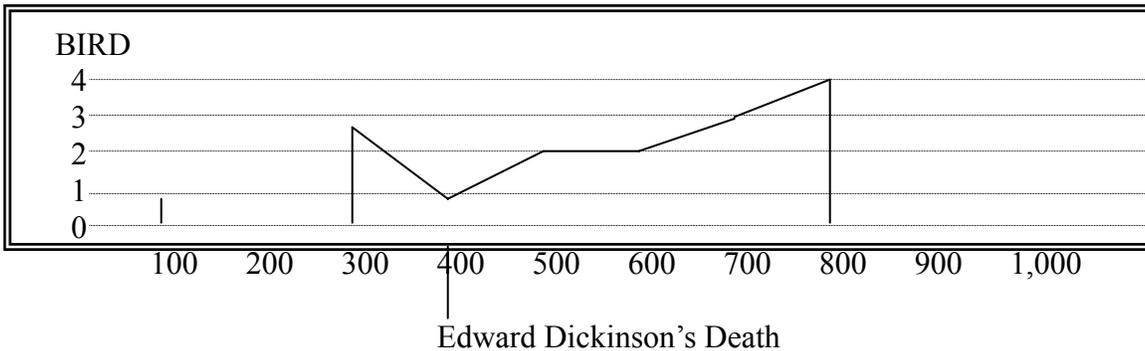
Then, when this imagery reaches its highest peak in the span of letters from 800-899, it disappears. Dickinson ceased engaging with the image of birds unless the image of flowers was present along side of it.

In the following pictorial bar graph, the letter B represents at least a single bird image in the Dickinson/Holland correspondence; the letter F denotes a single flower image; and, the letter X signifies a single letter that contains both a flower and a bird image. The numbers along the bottom of the graph relate to the letter numbers denoted by Johnson.

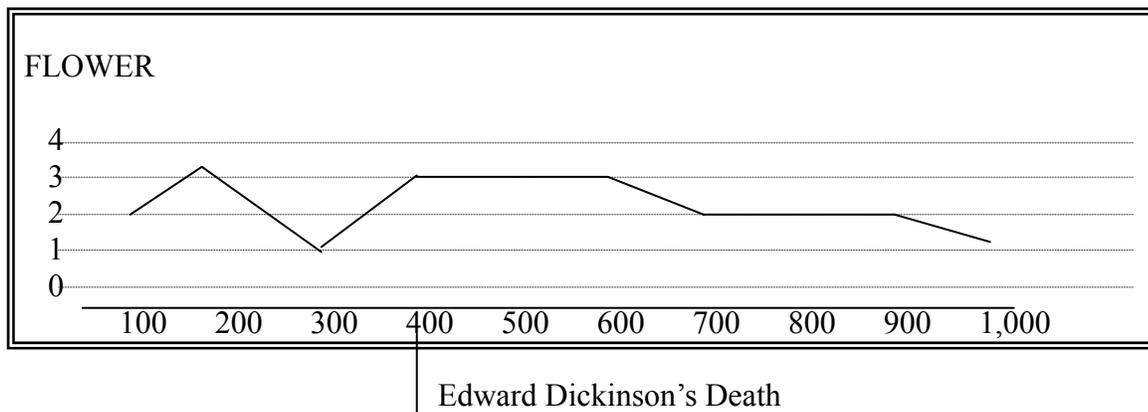
		F	B	F	F	F	B	B		
		FX	B X	F	BF	BF	BFX	B X	FX	
		BFX	BFX	BFX	BF	BFX	BFX	BFX	FX	F
Letter	100	200	300	400	500	600	700	800	900	1000
Numbers										

This bar graph, while showing all the different kinds of the imagery and how it correlates together, does little to give an individual representation of each picture alone. The following three line graphs isolate each image in order to see the individual change of the pattern over time.

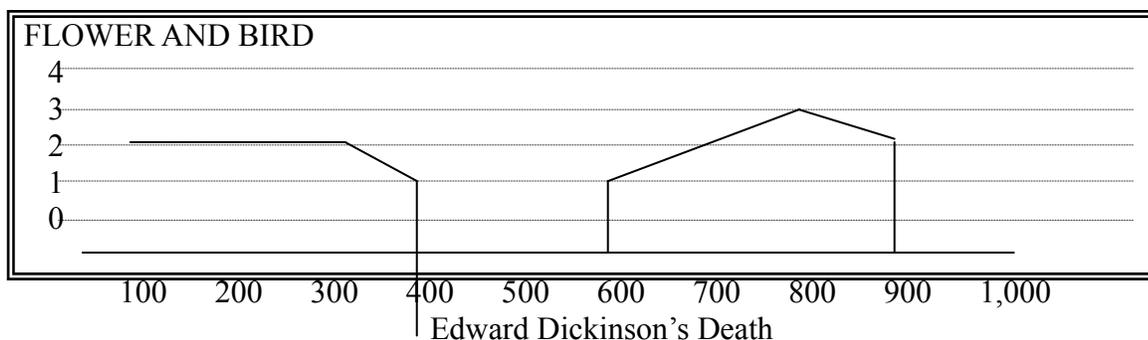
In Dickinson's early letters to Elizabeth Holland, there is only one example of independent bird imagery. Dickinson's letters to Holland begin to show the independent bird imagery in the letters between 300-399. As previously mentioned, there is a decrease in this imagery when Edward Dickinson died, and from that point on, there is a steady rise in the bird imagery. Followed by this subsequent rise and the imagery's highest peak in the span from 800-899, it strangely terminates.



Compared to bird imagery, the flower imagery in Dickinson's letters to Elizabeth Holland is uniformly spaced throughout the lifetime of the correspondence. With the exception of the letters numbered 300-399, there are either two or three representations of an isolated flower image. The other segregation is in the grouping of letters between 1,000-1,046, shortly previous to Emily Dickinson's death. However, it is implicit that because there are fewer letters, there would also be a reduced number of images.



Although the line graph makes it appear that the letters that contain both flower and bird images are an insignificant minority, these letters still total fifteen, almost equaling the letters with solitary bird images. Just as the bird imagery slackens after Edward Dickinson's death, the letters that contain combined imagery disappear after the event. These two subsets of the correspondence mirror one another in the aspect that the imagery's highest peak was in the span from 800-899, and that there are no examples between 1,000-1,046.



Of the letters that incorporate floral imagery of any kind, Cynthia MacKenzie cites four letters to Elizabeth Holland that reference the clover plant. All of these letters transpire following the death of Edward Dickinson. In all of Dickinson's letters Johnson ever recovered, only two mentions of the clover plant happen before Edward Dickinson's death in 1875.

There is a similar heightened appearance of the unassuming flower in Dickinson's poetry after 1875. Though she wrote a lesser amount later in life, *A Concordance to the Poems of Emily Dickinson*, edited by S. P. Rosenbaum, shows seven poems with this floral mention.

In *The Gardens of Emily Dickinson*, Judith Farr comments that Elizabeth Holland visited Emily Dickinson sometime following her father's funeral, bestowing on her a clover that "had been pressed opposite a page from the First Book of Samuel" (Farr 96-97). However, Farr believes that this instance did not establish Dickinson's love for clovers; instead, it had been present all along. In 1862, Dickinson "wrote a love poem to the simple clover. Once again employing the language of social distinctions, Dickinson describes the clover's chief attributes in anthropomorphic terms: generosity, bravery, and humility," (Farr 130). As Farr affirms throughout her book, Dickinson's devotion to flowers was egalitarian, especially in her younger years.

The poem Farr references is “There is a flower that Bees prefer –” (J 380). Although never mentioning the clover precisely by name, Dickinson uses such comprehensible illustrations that a nineteenth century reader would be able to identify the plant almost immediately: “Her face be rounder than the Moon / And ruddier than the Gown / Of Orchis in the Pasture – / Or Rhododendron – worn –” (J 380). The most intriguing characteristic of this poem is the circular symbolism. “Michael Pollan tells us that ‘Honeybees favor the radial symmetry of daisies and clover and sunflowers,’ a complex structure that Emily Dickinson seems to have inspected closely” (Farr 184), especially owing to her fascination with the conception of circumference.

But, is it not possible that Dickinson’s fondness for the capable, steadfast, circular, clover be heightened by Holland’s present? The clover becomes a representation not only for Dickinson’s lost patriarch but additionally of her strengthened friendship with Elizabeth Holland. Dickinson writes of it to Holland through both of their hardships and losses later in their lives. In 1881 when Josiah Holland, Elizabeth’s husband, dies Dickinson writes, “Do you remember the clover leaf? The little hand that plucked it will keep tight hold of mine” (L 732). This unpretentious flower is no longer just a “Purple Democrat,” (J 380), but a representation of bereavement, friendship, and strength.

The same year that Dr. Holland died, Dickinson wrote another poem relating to clover, almost as if to coincide with the letters to Mrs. Holland. In “His oriental heresies” (J 1526), a bee is charmed to die by clover. The word “apostasy” gives a tone of unacceptance toward the happiness, as if the bee is in renunciation of the feeling. It is equally extraordinary that this “Clover plain” is not only the location where the bee concludes to die, but also the resting place of butterflies. While the bee could be at fault for his death because of the “heresies” involved, the butterflies are blameless. The clover itself is not anything picturesque that would entice the bees or butterflies, but instead is “plain.” The only appealing aspect to the plant is its purifying quality, which might make the bee as irreproachable as the butterflies.

In a different poem, “A single Clover Plank” (J 1343), the clover becomes an active participant in the fatality of the bee. Although the poem starts out hopefully: “A single Clover Plank / Was all that saved a Bee” the verse takes a darker turn by the second stanza, “The Billows of Circumference / Were sweeping him away –” (J 1343). The once admired circularity of the clover becomes the destructive element. Just like Edward Dickinson, the fated bee in this poem dies suddenly, without having a prospect of his destiny. What seems like a horrific event to the bee is diminished in the last stanza, “This harrowing event / Transpiring in the Grass / Did not so much as wring from him / A wandering ‘Alas’ –” (J 1343). This minimalist, personified plant has the power to make unforeseen death sublime.

Looking solely at Dickinson’s poems, the clover employs the persona of a capable egalitarian prior to Edward Dickinson’s mortality and then a burial ground and an innocent accomplice to execution after it. In Dickinson’s letters to Elizabeth Holland, the clover acts as a symbol of friendship and of perseverance throughout.

Even though Dickinson avoided most visitors in her later life, her feelings towards Elizabeth Holland never vanished. The young woman wrote to Holland in the beginning of their friendship to disclose, “It is cold tonight, but the thought of you so warm, that I sit by it as a fireside, and am never cold any more. I love to write to you – it gives my heart a holiday and sets the bells to ringing” (L 133). In her middle age, Dickinson refers to Holland as her “little Sanctuary” (L 521), indulging in the happiness she experiences within the friendship. Towards the end of Dickinson’s life, she reminisces to Holland, “It was lovely to see your Hand again in

the old attitude - a literary one, and the Present flew like a Butterfly, and the Past *was*, but there we must not linger - too many linger with us – ” (L 979).

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Bringing Human Rights Home: Toward a New Conceptualization of CEDAW Ratification Advocacy

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Introduction

In the more than two decades since the United Nations General Assembly adopted the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW),ⁱ 180 countries—over ninety percent of the members of the United Nations—have become party to the Convention and an additional country has signed the treaty, binding itself to do nothing in contravention of its terms.ⁱⁱ The CEDAW treaty—sometimes called the “Women’s Convention”—mandates gender equality in political and public life, property rights, legal capacity, marriage law, family decision-making, and health care services. The treaty also contains an enforcement mechanism, an Optional Protocol, which provides a process for redress of human rights violations, as well as a procedure enabling the CEDAW Committee to initiate inquiries into situations of grave or systematic violations of women’s rights.

As a comprehensive world survey issued by the United Nations Development Fund for Women chronicles, numerous countries around the world have experienced positive gains that are directly attributable to their ratification of CEDAW.ⁱⁱⁱ In such countries as Nepal, Japan, Tanzania, Botswana, Sri Lanka, and Zambia, CEDAW has been empowering women around the globe to change constitutions, pass new legislation, and influence court decisions. Although the United States played an active role in drafting CEDAW, however, the U.S. has not yet ratified the CEDAW treaty.^{iv} On four different occasions, the United States Senate has held hearings regarding ratification, but without completing the process of advice and consent.^v Because the CEDAW treaty is an “international bill of rights for women” and an important instrument for securing women’s human rights, this paper focuses upon the debate surrounding U.S. ratification of the treaty and the work of non-governmental organizations and human rights education in promoting the CEDAW’s precepts.

International Human Rights Law and the CEDAW Treaty

Until the CEDAW treaty entered into force in 1981, no international document comprehensively addressed women’s human rights in political, cultural, social, economic, and family life. As the product of more than thirty years of work by the United Nations Commission on the Status of Women, the CEDAW treaty established a human rights language for women. Addressing gender-based forms of human rights violations, the CEDAW treaty has been used to incorporate women’s rights into national constitutions, to update or eliminate discriminatory laws, and to influence court decisions in many countries.^{vi}

Calling upon signatory governments to remove barriers to substantive equality, the CEDAW requires state parties to examine the actual conditions of life for women and girls in their country, to report on structures and customs that discriminate against women and girls, and to take positive steps to eliminate those barriers. The CEDAW treaty aims not only at equality in political and civic life; it also formulates a vision of substantive equality for women in economic,

social, and cultural spheres. As such, CEDAW provisions require states to change laws, policies, and education and to introduce special programs for women. In addition, the CEDAW treaty strives to eliminate the perpetuation of women's equality by obligating states to proactively eliminate sex-role stereotyping institutions of education and employment.

The Impact of the CEDAW Treaty in an International Context

Many of the 180 countries that have ratified the CEDAW have used it to guide the passage and enforcement of national laws. CEDAW has been an important tool to promote and ensure access to education for girls and women. After ratification, many countries have taken efforts to increase literacy and education for girls and women. Jordan, for instance, implemented compulsory education and expanded literacy programs for girls. As a result, illiteracy rates have fallen 3.5% a year for 12 years running.^{vii} In Burkina Faso, the government created satellite schools in rural areas, giving many girls access to an education for the first time. Half of the student population in these schools is comprised of girls.^{viii} Since its ratification of CEDAW in 1981, Egypt has bolstered its efforts to educate girls. As a result, female illiteracy declined from 62% in 1986 to 51% in 1996. In addition, female enrollment in elementary education rose from 91% in 1992 to 98% in 1998.^{ix}

CEDAW has also influenced initiatives against human trafficking. Since CEDAW was ratified, Nepalese media and local NGOs have promoted awareness of the trafficking of girls and women from Nepal to India. As a result, the country has undertaken several initiatives to protect survivors of trafficking. In 1993, the government passed a bill to enforce stricter treatment of individuals accused of trafficking, and in 1995, the country became party to an international treaty to suppress trafficking and prostitution.^x In addition, the government's Ministry of Women and Social Welfare has created a national task force to guide the government's efforts to combat trafficking.^{xi}

In addition to improving women and girl's access to education and implementing domestic legislation against trafficking, Articles 7 and 8 of CEDAW have also been used to promote the inclusion of women in political life, especially with respect to voting, policy formation, associations and non-governmental association membership, holding office, and representing countries internationally. In India, for instance, 33% of seats at the local government level are now reserved for women. In France, a 1999 constitutional amendment requires political parties to include 50% of women candidates on party lists submitted for election. Non-governmental organization advocacy led to the 1995 renewal of the Ugandan constitution, which now contains guarantees for women's political participation. The constitution reserves a minimum number of parliamentary seats for women, requires that each administrative district have at least one woman representative, and provides that at least one-third of the seats in local governments are filled by women.^{xii}

The CEDAW Treaty in the United States

The United States is the only industrialized country that has not ratified the CEDAW treaty.^{xiii} Although the United States was active in drafting the treaty and President Carter signed the CEDAW on July 17, 1980, the treaty was subsequently stalled in the Senate Foreign Relations Committee. In September 1994, the treaty was reported out of the Senate Foreign Relations Committee favorably by a vote of 13 to 5, with one abstention. When the Senate,

under new Republican leadership, convened in January 1995, however, the treaty reverted back to the Senate Foreign Relations Committee.

Momentum for the treaty grew in 2002 under the leadership of Senators Joseph R. Biden, Jr. (D-DE) and Barbara Boxer (D-CA). The treaty was voted favorably out of the Senate Foreign Relations Committee by a bipartisan vote of 12 to 7 on July 30, 2002. However, an overcrowded fall session prevented the treaty from being considered by the full Senate. Senate rules required that the treaty revert back to the committee in the next Congress. The new committee chairman, Senator Richard Lugar (R-IN), indicated that he would wait for the Bush Administration to complete a review of the treaty. In early 2002, the State Department notified the Senate Foreign Relations Committee that the CEDAW treaty was “generally desirable and should be ratified.” Nevertheless, the Administration has not yet taken a formal position on the treaty; it awaits a Justice Department review about what Reservations, Understandings and Declarations may be necessary.

Because U.S. Senate action on the treaty’s ratification has been blocked, momentum for ratification has begun to come from the states. To date, legislatures in ten states have endorsed U.S. ratification: California, Hawaii, Iowa, Maine, Massachusetts, New Hampshire, New York, North Carolina, Rhode Island and Vermont. The Connecticut and Wisconsin Senates and the House of Representatives in Florida, Illinois and South Dakota also have endorsed U.S. ratification.

The Discourse of Non-Governmental Organizations in CEDAW Ratification

A substantial coalition of non-governmental organizations, such as Amnesty International, Human Rights Watch, the Center for Women’s Global Leadership, and Equality Now have organized grassroots campaigns to advocate for the U.S. ratification of CEDAW. The vast majority of this literature produced by these non-governmental organizations argues that U.S. ratification would be an important statement of the country’s commitment to women’s human rights in a global context. By framing the need for ratification in the context of international diplomacy, however, this argument falls dangerously close to cultural imperialism—the argument that the United States, through its ratification of the treaty, can be an important global force in “saving” women in other parts of the world.

What this argument overlooks is that governments in nearly every other country in the world^{xiv}—often due to sustained grassroots activism by local feminists—have *already ratified the treaty*; many have even used it as a normative standard by which to evaluate and change domestic laws. When framed in this way, then, the United States is not leading the world in human rights—it is, rather, lagging behind in affirming its commitment to women’s human rights.

Despite his well-intentioned plea for the U.S. ratification of CEDAW, Harold Koh, former U.S. Secretary of State for Democracy, Human Rights, and Labor, focuses almost exclusively upon the argument that U.S. ratification would improve the United States’ ability to “make an important global statement ensuring the seriousness of our national commitment to these issues.”^{xv} Focusing upon egregious women’s human rights violations in Afghanistan, Bosnia, Haiti, Kosovo, and Rwanda,” Koh argues that human rights abuses in these countries “painfully remind us of the need for all nations to join together to intensify efforts to protect women’s rights as human rights.”^{xvi} Although this is certainly an important goal—and a goal that may indeed be facilitated with U.S. ratification—Koh’s discussion of the need for CEDAW

is framed as an assertion of the need for human rights for women in other countries, such as Afghanistan, and not for women in the United States. By “othering” the discourse of human rights, this argument relies upon a dichotomy in which the United States does not need human rights law as much as the other countries he mentions, which require international human rights instruments in order to protect women’s human rights.

In his focus upon women “around the world” who “are subject to stunning abuses resulting from deeply entrenched cultural and religious norms,” Koh argues, “The treaty has demonstrated its value as an important policy tool to promote human rights in many of the foreign countries that have ratified CEDAW.”^{xvii} Although this claim is certainly valid—women are indeed subject to abuses justified by culture and religion and the CEDAW has been used as a policy tool to promote women’s human rights—Koh’s article does not consider the value of CEDAW in promoting women’s human rights in the United States. As DeFrancisco et. al argue in an article in *Women and Language*,^{xviii} the federal government’s use of human rights discourse only within the context of international policy and international relations indicates that the government blatantly refuses to acknowledge the domestic implications of the CEDAW treaty. Koh, in other words, is entirely focused upon the message ratification would send to the global human rights community—and not upon the United States’ *domestic need* for a commitment to women’s human rights.

The United States based NGO Human Rights Watch advances a similar argument for U.S. CEDAW ratification. In its material for CEDAW activists, the organization contends, “By ratifying CEDAW, the U.S. would send a strong message that it is serious about the protection of women’s human rights around the world.”^{xix} Although obviously it is important for the United States to support protecting women’s human rights, this argument overlooks the U.S. responsibility to protect the human rights of American women.

In the advocacy material from the Campaign to ratify the Women’s Convention, a similar argument can be found:

The United States has long been a world leader on human rights. But U.S. failure to ratify the treaty allows other countries to distract attention from their neglect of women and undermines the powerful principle that human rights of women are universal across all cultures and religions. Until the United States ratifies, our country cannot credibly demand that others live up to their obligations under this treaty.^{xx}

This argument is based upon the premise that “other countries” look to the United States as a “world leader on human rights.” Whether or not this is true, it seems contradictory to claim that other countries look to the U.S. as a world leader on women’s human rights when the U.S. has not ratified the primary document ensuring women’s human rights for nearly twenty-five years.

In addition to focusing upon the need for U.S. ratification based upon the message ratification would send to the international community, non-governmental organizations in the United States also overwhelmingly focus upon criticisms of the CEDAW treaty as a means of advancing their arguments in favor of U.S. ratification. The arguments made to defend CEDAW against its detractors, however, actually weaken the benefits of the CEDAW treaty. In their urgency to address their critics, many grassroots organizations working for CEDAW ratification stress that the United States can be in compliance with the treaty without changing its domestic laws. For example, in response to the fear that U.S. ratification would give the U.N. authority

over the sovereignty of the United States, a Human Rights Watch “Fear and Fact” website section notes:

CEDAW is not a self-executing treaty, and thus legislation would need to be passed in order to implement any of its obligations. Ratification of CEDAW alone would not give the United Nations or any other body the power to enforce CEDAW in the U.S.^{xxi}

Although this argument is correct in stating that the CEDAW is non-self executing, this argument is problematic because it uses the fact that the treaty would have no effect as a justification for ratifying it. This begs the question of why a country would ratify a treaty that has no domestic effect at all.

In response to this question, of course, defenders of CEDAW would argue that the United States does not need to use the treaty in a domestic context, since U.S. laws already comport with the treaty. As Harold Koh argues, CEDAW “treaty provisions are entirely consistent with the letter and spirit of the United States Constitution and laws, both state and federal.”^{xxii} What Koh’s assertion ignores, however, is why the United States would require four reservations, three understandings, and two declarations to a treaty that already comported with “the letter and spirit” of its domestic laws.

In its argument for U.S. ratification of CEDAW, the Campaign to Ratify the Women’s Convention utilizes two, now familiar arguments. First, the advocacy material for the campaign argues that the treaty does not need to be used domestically; second, it argues that the treaty should be ratified as a statement to the United States’ support of women’s human rights around the world:

Ratification does not require any change in U.S. law and would be a powerful statement of our continuing commitment to ending discrimination against women worldwide. The U.S. already has laws consistent with the CEDAW Treaty.^{xxiii}

This rhetoric is essentially based upon the assumption that the United States is outside the discourse of human rights. While the Campaign affirms the United States’ need to commit its intent to eliminate discrimination worldwide, it immediately follows with a disclaimer that the U.S. will not need to change its domestic laws to comport with the CEDAW. The implication of these arguments is that rights afforded to women in the CEDAW treaty are not needed in the United States, because U.S. women require civil protections, but not *human rights* protections.

The Way Forward: A Modified Proposal for CEDAW Ratification Activism in the United States

Until there is a grassroots movement for human rights education in the elementary, primary, secondary schools, and universities—and, indeed, until a critical mass of Americans begin to see human rights as applicable to them—there will be no effective grassroots movement for CEDAW ratification. Although CEDAW ratification should certainly be a goal for United States women’s human rights activists, my analysis of U.S. reservations, declarations, and understandings (RUDs) to the treaty indicate that if the CEDAW is ratified with these RUDs, it will have virtually no impact upon changing U.S. domestic law.

Although many CEDAW ratification activists imply that the main goal of CEDAW ratification has little or nothing to do with changing United States law, introducing international human rights arguments and perspectives into domestic law—as Elizabeth Schneider points

out^{xxiv}—has the potential to transform the very conceptual bases of the problems and issues that are dealt with in domestic courts. A human rights framework, for instance, presents an indivisible perspective of rights that affirms the interconnections and indivisibility of political, civil, economic, social, and cultural rights. In addition, a human rights framework presents a more intersectional perspective that emphasizes the multiple oppressions of race, gender, and class. Third, human rights law recognizes a positive state responsibility for non-discrimination, social welfare, and affirmative action initiatives. Finally, international human rights law challenges the Rehnquist Court’s view that the United States Constitution imposes only negative and no positive obligations upon government.^{xxv}

Clearly, any argument to incorporate international human rights law into the United States must begin at a grassroots level. As previously discussed, many local and state initiatives have incorporated the principles of CEDAW into local and state laws. In 1998, San Francisco passed a city ordinance that endorsed the principles of CEDAW and created a framework for integrating them into city governance.^{xxvi} Another recent campaign to incorporate CEDAW principles into city law is the New York City Human Rights Initiative, which is campaigning to pass a NYC law that will locally implement the CEDAW and the CERD (Convention on the Elimination of Racial Discrimination).^{xxvii}

ⁱ The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) entered into force on September 3, 1981.

ⁱⁱ See <http://www.un.org/womenwatch/daw/cedaw/states.htm>. Retrieved on 2/14/05.

ⁱⁱⁱ See UNIFEM, *Bringing Equality Home: Implementing the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)*, available at: <http://www.unifem.undp.org/cedaw/cedawen4.htm>. Accessed 2/14/05.

^{iv} In order to for an international treaty to become ratified under the United States Constitution, a President must first sign a treaty before submitting it on for review by the Senate Foreign Relations Committee. Once the Committee considers the treaty, the full Senate can then deliberate and vote on it, where two-thirds (67) of the entire Senate must approve it. Finally, the sitting President must re-sign the treaty.

^v For a detailed history of the U.S. Senate ratification process with regard to the CEDAW, see: http://www.womentreaty.org/facts_history.htm. In June 2002, the Senate Foreign Relations Committee held a hearing on CEDAW. On July 30, 2002, the Committee voted twelve to seven in favor of sending CEDAW to the full Senate for ratification. Unfortunately, the full Senate did not vote on CEDAW before the end of the 107th Congress. For CEDAW to move forward, the Senate Foreign Relations Committee will again need to vote in favor of sending the treaty to the full Senate for ratification. At present, the CEDAW remains stalled in the Senate Foreign Relations Committee.

^{vi} See *CEDAW: The Treaty for the Rights of Women*. Ed. Leila Rassekh Milani, Sarah C. Albert and Karina Purushotma. Washington: The Working Group on Ratification of the U.N. Convention on the Elimination of all Forms of Discrimination Against Women, 2004.

^{vii} See Jordan, CEDAW 22nd Session, 2000. Available at: <http://www.un.org/womenwatch/daw/cedaw/cedaw22/jor1.pdf>

^{viii} See Burkina Faso, CEDAW 22nd Session, 2000. Available at: <http://www.un.org/womenwatch/daw/cedaw/cedaw22/bfa.pdf>

^{ix} See Egypt, CEDAW 24th Session, 2001. Available at:
<<http://www.un.org/womenwatch/daw/cedaw/cedaw24/cedawcegy45.pdf>>

^x The treaty is officially known as the Convention for the Suppression of Traffic in Persons and of the Exploitation of the Prostitution of Others.

^{xi} Abridged from *CEDAW: The Treaty for the Rights of Women*. Ed. Leila Rassekh Milani, Sarah C. Albert and Karina Purushotma. Washington: The Working Group on Ratification of the U.N. Convention on the Elimination of all Forms of Discrimination Against Women, 2004. pg. 30

^{xii} Ibid. pg. 42

^{xiii} For a detailed timeline of the history of the CEDAW Treaty, see:
<http://www.womenstreaty.org/facts_history.htm>

^{xiv} It should be noted that the only countries that have not ratified the CEDAW treaty include Monaco, Iran, Oman, Qatar, United Arab Emirates, Brunei Darussalam, Cook Islands, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Tonga, Somalia, Sudan, Swaziland, and the United States of America.

^{xv} See Koh, “Why America Should Ratify the Women’s Rights Treaty (CEDAW).” *Case Western Reserve Journal of International Law*. (2002): 34.3, pg. 266

^{xvi} Ibid, pg. 267

^{xvii} Ibid, pg. 269-70

^{xviii} See DeFranciso, et. al. “The Home Side of Global Feminism: Why Hasn’t the Global Found a Home in the U.S.” *Women and Language*. (2003): 26.1, pg. 101

^{xix} See the Human Rights Watch Campaign for CEDAW Ratification: <<http://hrw.org/campaigns/cedaw/>>

^{xx} For this argument, see the advocacy material of the campaign to ratify the Women’s Treaty:
<<http://www.womenstreaty.org/why.htm>>

^{xxi} See the Human Rights Watch Campaign for CEDAW Ratification: <<http://hrw.org/campaigns/cedaw/>>

^{xxii} See Koh, “Why America Should Ratify the Women’s Rights Treaty (CEDAW).” *Case Western Reserve Journal of International Law*. (2002): 34.3, pg. 270

^{xxiii} Cited from the advocacy material of the campaign to ratify the Women’s Treaty:
<<http://www.womenstreaty.org/why.htm>>

^{xxiv} See Elizabeth Schneider, “Transnational Law as a Domestic Resource: Thoughts on the Case of Women’s Rights.” *New England Law Review*. (2004).

^{xxv} Ibid.

^{xxvi} This summary of the San Francisco and New York initiatives is summarized from Amnesty International USA’s Women’s Human Rights Program document, “Making Human Rights Meaningful in our Communities.” Available at: <http://www.amnestyusa.org/women/interact/cerd_cedaw.html>

^{xxvii} Ibid.

Taking the Initiative: Envisioning a Future for Campus Mental Health

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I can easily recall my first few days living in the dorms during the fall of '94. I arrived at Oakland University with double academic scholarships and an invitation to attend the Honors College. The world seemed so full of possibilities, and yet every last one of them felt as though it were just beyond my grasp. I have a vivid recollection of sitting by my window late one night watching the other freshmen huddled together on the lawn below me. As I silently observed my peers, I could feel my emotions welling up inside, tumultuously raging their way into a self-destructive knot embedded deep within my gut. I felt jealousy, anger, sorrow, superiority and self-righteousness all at once. No longer did the glass window I was perched behind feel as though it were the only barrier separating me from the group outside. We were worlds apart, inhabiting completely different planes of existence. I could feel myself drifting, disassociating, detaching with a familiar sense of invisibility.

As proverbial feelings of hopelessness engulfed me, I sought the only relief I knew to be a temporary guarantee. That evening, I swallowed a handful of pills. The combination of Benadryl and antidepressants, whose bottles warned of their potential sedative effects, would be enough to induce a drowsy state of oblivion. The physical discomfort of mental turmoil would soon be subdued, and another day would pass on by. I promised myself that things would feel much better once I woke up, that I would then cope with the aftermath of another missed day of classes. For the time being, though, I could simply let go. Abandoning all care, I welcomed my much sought after relief, a momentary break from the perpetual nightmare that had managed to cast a shadow over my life...

College is supposed to encompass the best years of one's life. It is a time for self-discovery, the establishment of life-long friendships, and rejoicing in the newfound freedom that accompanies a first taste of independence. However, as demonstrated in my case, the early years of college life are also a time of major adjustment, in which depression can feel overwhelming, and fear and uncertainty are most prevalent. As assigned coursework accumulates and competitive pressures soar, stress levels abound, making the risk of suicide a grave concern. This is also a time when many students first encounter the early stages of mental illness. Nevertheless, while studies and reports indicate that students' emotional health is ailing and the rate of suicides are escalating, colleges are cutting back their funding, and adequate services are not being provided to meet these students' psychological needs.

It is, therefore, of utmost importance that efforts are made to help remedy this problem. There is a strong need for existing mental health services across campuses to be examined and evaluated. Needs assessments should be conducted and the design and implementation of new or modified programs are in order. In addition, informational seminars advocating mental health awareness and attempting to break down the barrier of stigma that surrounds psychiatric disorders are a necessity. Furthermore, training for students, faculty, and administration as to the signs and symptoms of mental illness, that they themselves or their peers may face, should take place.

According to the American College Health Association, one in ten college students are diagnosed with some type of psychiatric disorder (Beyond Stress). A recent UCLA survey

reports that more than thirty percent of college freshman admittedly feel overburdened and overwhelmed a majority of the time, this being a significant increase in number in comparison to fifteen years ago (NMHA). In fact, the National Institute of Mental Health (NIMH) reports that “An estimated 22.1 percent of Americans ages 18 and older—about 1 in 5 adults—suffer from a diagnosable mental disorder in a given year” (Suicide Facts). Although psychiatric disorders can first appear at any age, for many illnesses such as major depressive disorder, bipolar disorder, schizophrenia, or anxiety disorders, the average age at onset is during the late teens to mid twenties. Research conducted by NIMH concludes that more than 90 percent of people who end their own lives suffer from depression or another diagnosable mental/substance abuse disorder (The Numbers Count). Moreover, suicide is identified as the third leading cause of death among youth between the ages of 15 and 24 (In Harms Way). Even more alarming is the fact that for every suicide death, an estimated 8 to 25 unsuccessful attempts are made (Suicide Facts). Given these statistics, it should not come as a surprise that parents are increasingly inquiring into what degree of mental health services their children can expect to be provided with across campuses nationwide.

The National Survey of Counseling Center Directors corroborates that in recent years, there has been a significant increase in the number of college students seeking counseling services. According to their conducted poll, the magnitude of severity of mental illness that counseling centers are detecting among their students is also on the rise. There are a number of possibilities contributing to this trend. First, the discovery of newer and more effective psychotropic medications greatly increases the prospects for troubled students to successfully graduate from high school, thereby enabling students with a history of mental illness to enroll and register in college courses. Furthermore, the 1990 enactment of The Americans with Disabilities Act stipulates guidelines making universities more accessible to disabled students, who in years past would not have been granted the same level of opportunities (Haas et al. 1224-40).

In recent years, the emotional wellness of the college student has emerged as a popular topic, receiving a great deal of media coverage. Lawsuits have been publicized in which parents of students who committed suicide allege universities are failing to provide adequate psychiatric care assisting in the prevention of such tragic occurrences, and should therefore be held liable for their negligence (McGinn et al. 59-60). Colleges, however, are confronting identical challenges, as are other government institutions in today’s struggling economy, when it comes to finding available funding to pay for the escalating demand for mental health services. In fact, 38 percent of colleges do not offer any form of psychiatric services at all (Haas et al. 1224-40). Other campuses counseling centers are compensating for their overcrowded caseloads and understaffed facilities by placing limits on the average number of sessions allowed per client. Stone, Vespia, and Kantz report that 73 percent of the counseling centers surveyed in their research recorded an average of 3 to 6 sessions per client, and will typically place the cap at a little over 11 sessions (498-510). Further difficulties specify the increasing need among students for specialized treatments plans, which exceed both university resources and areas of expertise. Instead, many students are referred out for long-term treatment under the care of a specialist not directly affiliated with the university. A small percentage of students are actually advised to withdraw from the university due to their inability to function academically, as well as other safety concerns. Nevertheless, a majority of universities surveyed have admittedly failed to implement any formal follow-up procedures for students after a referral or withdrawal takes place (Stone et al. 498-510).

In light of surmounting criticism, professionals have made several recommendations to help improve the future of university mental health services. One suggestion points to the need to heighten campus outreach programs, thereby enabling college admission departments to confidentially screen all incoming students for potential mental disorders or suicidal ideations. All identified at-risk students could then be immediately encouraged into treatment (Haas et al. 1224-40). In fact, our own Michigan State Representative, Andy Meisner, is currently circulating a petition for legislation proposing Congress pass a bill mandating mental health education for all incoming college freshmen about the warning signs of suicide and depression. Early intervention in the lifecycle of a psychiatric illness can significantly impact the outcome of recovery. In fact, the longer an illness remains untreated, the greater the chances that cumulative consequential effects will occur, progressively diminishing an individual's chance at resuming a healthy and productive life (The Commission). It is, therefore, imperative that safeguards be put in place, ensuring that accessible and effective treatment, support, and accommodations are made to aid in a successful college experience for individuals suffering from mental illness.

Another suggestion is that a national field study be conducted in which a few universities are selected, each representing a different counseling center model. Information collected on each model could then be compared and contrasted in order to determine the most effective and efficient revisions that need to be made optimizing future campus mental health care provisions. The new method developed should clarify specific roles within the system. There should be more uniform assessments of students' psychological disorders and standardized evaluations of clinical procedures, as well as the mandatory use of treatment plans and implementation of formal follow-up policies for all referrals. In addition, a more systematic review of clinical policies should be executed in order to design and develop further training in areas that lack merit (Stone et al. 498-510). The President's New Freedom Commission on Mental Health expounds on this topic, reiterating that it is necessary to transfer research findings back into the community setting in the form of better treatment provisions and more updated support services. Ongoing advances in research and technology should continuously transform the mental health system directed at meeting its ultimate goal: the hope of recovery.

Current proposals have been made advising the use of the Internet as an effective tool to develop a uniform mental health information and database system (Stone et al. 498-510). This database could provide a confidential means of engaging students in a proactive approach toward seeking help. Not only can the system be used to help answer specific questions and concerns, but it can also point students in the right direction, providing them with invaluable and immediately accessible information pertaining to services available on their own campus. The Internet can also aid in the process of screening for at-risk students through the use of computerized tests (Haas et al. 1224-40). The Commission agrees that an integrated technology and communications infrastructure is a critical step in the transformation of the mental health care system. They recommend two components in order to meet this goal. First, a telehealth system should be made available in order to improve consumer access to care. Second, there is a need to develop and implement a combined system that encompasses both electronic health records as well as personal health information systems. The primary goal of these systems is to provide "access to timely and accurate information that promotes learning, self-monitoring, and accountability."

It is equally important to recognize pertinent gains that can be made in all facets of the college environment by providing knowledge and experience to better equip students, faculty, and administrators with ways of implementing a wholesome and supportive learning

environment (Wahl). “When people have a personal understanding of the facts, they will be less likely to stigmatize mental illnesses and more likely to seek help for mental health problems” (The Commission). Persons suffering from mental illness have the dual tasks of coping with the symptoms of their disease, as well as negative societal reactions toward mental illness and self-stigmatization. Reacting to these negative stereotypes, individuals with psychiatric disorders are more likely to deny their symptoms and resist seeking treatment. Studies, however, have shown that individuals with previous contact or personal history relating to someone with a mental illness are less likely to engage in rejecting or discriminating behaviors (Chung et al. 63-72).

Research also suggests that it is essential university administrators are familiar with the Americans with Disabilities Act in order to comply with the law and adequately respond to the needs of students and employees with mental illness. In working together with individuals living with psychiatric disorders, faculty and administrators will be better able to brainstorm ways that will be most helpful in assisting the student during times of emotional stress. Guidelines can be established in advance, creating accommodations that foster an atmosphere intended to minimize the disruptive nature that mental illness may have on a student’s academic success (Wahl). Examples of accommodations might include provisions such as extended time for taking exams, extensions on assignments, or working with a counselor to figure out the correct number of courses students should enroll in, to avoid overtaxing their emotional well-being or tolerable levels of stress (Haas et al. 1224-40).

If education is the key, then the psychology curriculum at universities should extend beyond basic lectures that teach about the symptoms and causes of psychiatric disorders, and incorporate a more humanistic approach inviting speakers to talk about their own personal experiences with mental illness (Wahl). In fact, Wayne State University and the non-profit mental health agency, Kadima, conjointly sponsored an event on October of 2004 featuring a panel of speakers lecturing on the topic of mental health in the college environment. The scheduled keynote speaker, Ross Szabo, Director of Youth Outreach for the National Health Awareness Campaign, himself suffers from bipolar disorder, and relayed his story of how he managed to overcome the obstacles imposed by his illness in order to successfully obtain a graduate degree. I also spoke at this conference, concluding the seminar with a presentation describing my own account of my battle against endless years of debilitating depression and a life threatening eating disorder, only to return to school ten years later in hopes of finally obtaining a Bachelor’s Degree.

I held onto my original copy of the scholarships I was offered back in 1994. The letter I received from Oakland University explicitly stated that they were honored to have me join as a member of their student body, and that they felt I would be an invaluable addition to both their campus and eventually to society as a whole, upon graduating and entering the workforce. I sincerely believe that this continues to be the case, despite the fact that I have long since had to let go of those awards that I was granted. Mental illness is a penetrable barrier. I feel that it is my duty to take the initiative to help educate the campus community, as well as society in general, on this controversial topic. I only make life harder for myself when I run from my disorder. Instead, I am learning to embrace the unavoidable and have begun to work with my disability. The more publicly open I am, the greater my surprise to learn that I am not alone. There are numerous other students struggling with similar issues, and it would be a grand shame if we all threw in the towel and gave up our fight.

So, the remaining question is what do I envision for the future? In researching this paper, I happened across a call for action made by The Nations Voice on Mental Illness. NAMI has

started a college affiliate initiative called *NAMI on Campus*, a network of student-led mental health awareness, education, and advocacy groups tailored to the needs of individual college communities. *NAMI on Campus* aims to accomplish several goals. These campus chapters will help students through mutual support and education; pool resources with others to improve services for people with mental illness and their families; educate the general student body about serious mental illness; and improve the overall mental health of the campus community. Furthermore, they aim to overcome the stigma surrounding mental illness. Most importantly, *NAMI on Campus* strives to end the seclusion college students feel when there is no one to talk to who understand the problems of coping with depression or other mental illnesses (Launching a NAMI Campus Affiliate). It is my personal quest to start a NAMI campus affiliate during my remaining years enrolled at Oakland University. I believe that in collaborating with the Graham Health Center, and pooling all available resources, we can together strengthen the support services that the university has to offer.

Indeed, the President's New Freedom Commission on Mental Health encapsulates my ideal in the following vision statement: "We envision a future when everyone with a mental illness will recover, a future when mental illnesses can be prevented or cured, a future when mental illnesses are detected early, and a future when everyone with a mental illness at any stage of life has access to effective treatment and supports – essentials for living, working, learning, and participating fully in the community." Students should feel welcome no matter who they are or what their backgrounds consist of. Perhaps with a bit of encouragement, students will take the initiative and work toward ensuring a community on campus that is accepting and receptive to its student body in full!

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Elision and The H-Aspire Problem In French

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Linguists have attempted to explain the phenomena liaison and elision in French using a number of theoretical approaches, most notably non-linear phonology (Tranel 1995, 1996) and, more recently, Optimality Theory (Tranel 1994). Different proposed accounts of these phenomena either leave some questions unanswered or must include problematic complications to account for the lack of liaison and elision in the group of h-aspiré words. Using the Optimality Theory, Tranel (1994) tries to solve some of the gaps left behind by previous accounts. However, even Tranel encounters problems that he “solves” by allowing two rankings, which is an unnecessary complication of the grammar. Using ghost segments, following Zoll (1993), I propose to use one constraint hierarchy to account for elision and h-aspiré. My proposal relies on how the definite article and h-aspiré words are represented lexically. In section I, I will explain elision, liaison, and h-aspiré words and section II will provide an overview of Optimality Theory. My analysis of elision and h-aspiré in Optimality Theory will be in section III followed by a comparison with Tranel’s account in Section IV.

I. Phonological Phenomena of French

Two phenomena of French phonology are liaison and elision. Liaison is the pronunciation of a word-final consonant when it is followed by a word-initial vowel (Tranel 1994). However, if the sound following the word-final consonant is also a consonant, then the sound is not pronounced, that is, it is deleted. An example of liaison is illustrated in (1a) below in the linking of the definite plural article *les* and the plural noun *amis*. (1b) illustrates a case where liaison does not occur and the final consonant of the definite article is deleted.

- (1) a. *les + amis* [lezami] “the friends”
b. *les + garçon* [legarsõ] “the boys”

Elision can be considered as the opposite of liaison. It occurs when word-final vowel is not pronounced, i.e., deleted, when followed by a vowel-initial word (Tranel 1994). The vowel sound is present when followed by a consonant-initial word. Elision in French is shown in (2a) where the definite singular article *le* is combined with the singular noun *ami*. Elision does not occur in (2b) in the combination of the definite singular article *le* and the singular noun *garçon*.

- (2) a. *le + ami* [lami] “the friend”
b. *le + garçon* [ləgarsõ] “the boy”

From the above phenomena, one would conclude that the combination of the plural definite article *les* and the plural noun *hiboux*, which is pronounced [ibu] with an initial vowel, liaison should occur producing [lezibu]. However, neither liaison nor elision occurs in this word, or any other of this type labeled h-aspiré words. The h-aspiré words are exceptions to

both liaison and elision. This is shown in the following examples of liaison in (3a) and elision in (3b), where the asterisks indicate a non-occurring form.

- (3)
- | | | |
|------------------------|-----------------|---------------|
| | <i>expected</i> | <i>actual</i> |
| a. <i>les + hiboux</i> | *[lezibu] | [leibu] |
| b. <i>le + hibou</i> | *[libu] | [ləibu] |

What is it about this exceptional group that allows them to avoid elision and liaison as shown in the above examples?

II. Optimality Theory

The overview of Optimality Theory provided here summarizes Prince and Smolensky's (1993) introduction. The surface form of a given underlying form is considered optimal or harmonic in comparison to other potential surface forms of the underlying form. The burden of the work of the grammar in Optimality Theory falls on the evaluation of the candidate surface forms by simultaneously comparing each candidate surface form for constraint satisfaction. By having an evaluation procedure that compares potential surface forms for constraint satisfaction, some constraint violations are tolerated in surface forms. These surface violations arise through conflict between constraints that cannot be simultaneously satisfied by any potential surface form. When two constraints conflict, a candidate that violates one constraint must be deemed more harmonic (or optimal) than a candidate that violates the other constraint. The constraints in Optimality Theory, therefore, are violable and must be hierarchically ranked with respect to each other in order to determine a surface form. The constraints are supplied by universal grammar, but the hierarchical ranking of the constraints is language-specific. Thus, all differences among languages are accounted for by different rankings of the constraints.

Constraint interaction is illustrated with elision in (4). Elision is the result of satisfying a constraint, NoHiatus, prohibiting vowel hiatus. This constraint is satisfied by deleting one of the vowels violating the constraint against deletion, Max-IO.

- (4) a. NoHiatus : vowels are separated by consonants (Klein 1995).

Max-IO : any segment of input has a correspondent in output (McCarthy and Prince 1995).

b.

“le+ami” /lə+ami/	NoHiatus	Max-IO
→ la.mi.		*
lə.a.mi.	*!	

Even though the first candidate (the optimal candidate) violates Max-IO, it is still the optimal candidate because it satisfies the higher ranking constraint, NoHiatus, which the second candidate fatally violates. (5) shows how the same ranking accounts for the lack of elision when followed by a consonant beginning word.

(5)

“le+garçon” /lə+garsõ/	NoHiatus	Max-IO
lgar.sõ.		*!

→	lə.gar.sõ.		
---	------------	--	--

The first candidate in (5), as in (4), violates Max-IO since the vowel deleted. In (5), however, the constraint violation is fatal since the second candidate satisfies both constraints. This ranking, however, fails to account for h-aspiré words, as shown in (6) where the established ranking produces the wrong optimal candidate.

(6)

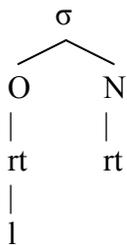
“le+hibou” /lə+ibu/	NoHiatus	Max-IO
→ *li.bu.		*
lə.i.bu.	*!	

The second candidate is the correct phonetic form, but it fatally violates the higher ranking constraint NoHiatus. So how can these h-aspiré words be uniformly accounted for in Optimality Theory?

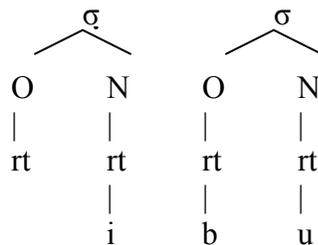
III. Ghost Segments

My analysis of elision and h-aspiré relies on how the words are represented in the lexicon. I use what is known as a ghost segment (Zoll 1993), which includes only a root node. The features representing the segments are supplied when motivated by the constraints. Ghost segments, that is, root nodes with no associated features can be a vowel, as in *le* in (7a) or a consonant as in *hibou* in (7b). The resulting representations are similar to those proposed by Kaye and Lowenstamm (1984).

(7) a.



b.



Now that the representations have been established, we can move on to the constraint interactions needed to account for h-aspiré words. The relevant constraints are defined in (8).

- (8) a. NoGhost: ghost sounds cannot surface in output.
- b. Max-Root: any root node in the input must have a correspondence in the output.
- c. *^{rt}]: ghost sounds cannot surface on the right edge of words.
- d. Align-Left: the left edge of a morphological word must coincide with the left edge of a syllable (McCarthy and Prince 1993, Tranel 1994.)

The interactions of these constraints are shown in (9). The crucial interaction is that Max-Rt dominates NoGhost, that is, parsing the root nodes of the input is accomplished at the expense of violating the prohibition against ghost segments. In other words, ghost segments surface to

ensure the root node is parsed. The optimal candidate, (9b), [lə.^{rt}i.bu], has a parse of both root nodes with one ghost segment (the vowel of the article) and one empty root node. Two ghost segments, as in (9c), also has a parse of all root nodes of the input, but it is non-optimal because it violates NoGhost twice.

(9)

	“le+hibou” /l ^{rt} + ^{rt} i bu/	* ^{rt}]	Max-Rt	NoGhost
a.	l ^{rt} . ^{rt} i.bu.	*!		
b. →	lə. ^{rt} i.bu.			*
c.	lə.hi.bu.			**!
d.	li.bu.		*!*	

(9d), which is the expected surface form given the ranking for elision in (4), is non-optimal because the root nodes have been deleted thus fatally violating the higher ranking Max-Rt constraint. (9a) is phonetically identical to (9d) and satisfies both Max-Rt and NoGhost. However, this candidate fatally violates *^{rt}], which prohibits empty root nodes at the right edge of words. Therefore, h-aspiré follows from best-satisfying the constraint ranking with one ghost segment and one empty root node.

Recall from section II that elision is the result of NoHiatus dominating Max-IO. The interaction between Max-RT and NoGhost does not alter the previously established ranking, though now Max-IO is replaced by Max-Rt. The crucial interaction here is seen by comparing (10a) and (10c). Satisfying Max-Rt with a ghost segment in (10c) compels a violation of the higher ranking NoHiatus. (10b) and the role of Align-Lt is discussed below.

(10)

	“le+ami” /l ^{rt} +ami/	Align-Lt	NoHiatus	* ^{rt}]	Max-Rt	NoGhost
a. →	l ^{rt} .a.mi.			*		
b.	la.mi.	*!			*	
c.	lə.a.mi.		*!			*

(10a) and (10b) are phonetically identical since in both cases there is no vowel hiatus. Furthermore, the constraints violated by these candidates are not ranked with respect to each other. These candidates differ in terms of satisfying Align-Lt, as shown in (11), where the ‘[’ is the syllable boundary and the ‘|’ is the word boundary.

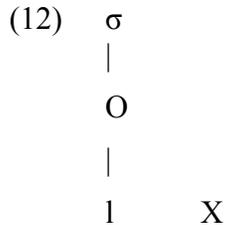
(11) a. l^{rt}.[|a.mi [|a.mi.

In (11a) the left edge of the syllable and word coincide due to the empty root node. In (11b), on the other hand, align is violated because the edge of the word does not correspond to the edge of a syllable. High ranking Align ensures that word edges coincide with syllable edges at the expense of an empty root node at the right edge of a word.

The final ranking I propose to uniformly account for elision and h-aspiré is {Align-Lt, NoHiatus} >> {*^{rt}} >> Max-Rt >> NoGhost. The highest ranking constraints, Align-Lt, NoHiatus, are the ones that play the biggest role in my analysis in so far as they determine the distribution of empty root nodes.

IV: Other Approaches to h-aspiré

Other analyses of h-aspiré in Optimality Theory, namely Tranel, have used the Align-Lt constraint, however these analyses lack the use of a ghost segment which poses problems on their rankings. One of these problems occurs in Tranel's analysis. Tranel uses the concept of a floating vowel to explain elision and h-aspiré. He defines a floater as vowel that has no higher structural node, as shown in (12).



The constraint interaction is what causes elision to occur (Tranel, 1996). The constraints Tranel uses and their interactions are shown in (13).

- (13) a. Onset: syllables must have onsets.
 Nuc-V: vowels must be the center of a syllable.
 b.

"le+ami" /lX+ami/	Nuc-V	Onset
→la.mi.		
lə.a.mi.		*!

The optimal candidate satisfies both constraints while the second candidate fatally violates Onset because the second syllable in the word lacks one. This constraint ranking is applied to h-aspiré in tableau (14).

(14)

"le+hibou" /lX+ibu/	Nuc-V	Onset
→*li.bu.		
lə.i.bu.		*!

The second candidate (the one we find in French) fatally violates Onset making the first candidate, the one we do not want to win, optimal. Tranel adds the Align-Lt constraint to select the proper optimal candidate and ranks it above Onset, shown in (15).

(15)

“le+hibou” /lX+ibu/	Align-Lt	Onset
li.bu	*!	
→lə.i.bu		*

So even though the second candidate violates Onset, the first candidate one fatally violates Align-Lt, making candidate two, the one we want, optimal. However, when this new ranking is used to account for elision now, the wrong optimal candidate is selected. Therefore, Tranel allows for two constraint rankings; one that accounts for elision, shown in (16a), and another that accounts for h-aspiré, shown in (16b).

- (16) a. Elision: Nuc-V>>Onset>>Align-Lt
 b. h-aspiré: Nuc-V>>Align-Lt>>Onset

V. Conclusion

Uniform rankings, such as mine, are preferred over exceptional rankings, such as Tranel’s. Even though both analyses use the Align-Lt constraint to account for h-aspiré, I avoided exceptional rankings due to my use of the ghost segment in the representation. My optimal candidates thus satisfy Align-Lt without the need for a separate ranking. Further research is needed to find if liaison can be accounted for with this ranking as well. This can be possible by placing a higher ranking constraint on the morphology-phonology interface above Align-Lt.

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The Effect of Social and Inanimate Stimulation on Emotionality in BALB/c Mice

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The impact of environmental enrichment on rodent behavior has long been recognized. Previous studies have continuously shown that rodents maintained under enriched conditions have increased memory and learning abilities in comparison to rodents maintained under standard conditions (Greenough et al., 1972; Teather et al., 2002). Another behavior that has been shown to be affected by environmental enrichment is emotional reactivity. Mice reared under enriched conditions were found to show reduced anxiety compared to mice maintained under standard conditions (Roy et al., 2001).

Most of these studies used environmental enrichment that consisted of a combination of social and inanimate stimulation. More recently, researchers have focused on determining whether these two environmental components, taken singly or together, impact rodent behavior differently (e.g. Pietropaolo et al., 2004).

This focus was inherent to the current study, which had the following two goals: (1) to replicate the findings of previous studies, which indicated that environmental enrichment affects behavior in mice. The effect of four different post-weaning environments on the emotionality in BALB/c mice was analyzed. It was hypothesized that mice reared in an impoverished/nonsocial environment (standard condition) would exhibit the highest level of emotionality (i.e. lowest level of exploration, the highest level of thigmotaxis, and the largest number of fecal boli). In contrast, mice reared in environments with social stimulation (impoverished/nonsocial), inanimate stimulation (enriched/nonsocial) or both (enriched/social) were expected to show lower levels of emotionality. (2) to evaluate whether the social or inanimate component affects emotional reactivity differently. In particular, the researchers analyzed whether the different components of the post-weaning environment have an additive effect or impact emotionality differently. The latter was expected and researchers suggested that the social component of the post-weaning environment increases exploratory behavior, whereas the inanimate component increases the overall activity level.

Methods

Subjects

Twelve BALB/c mice (ten males and two females) derived from three litters bred at the University of Michigan-Flint were used. The mouse pups were weaned on February 28, 2005, d0 of the experiment.

Experimental Protocol

On d0 (see fig. 1), mouse pups were randomly assigned to four post-weaning environments in a 2x2 factorial design. The random assignment ensured that each litter was represented in all four environmental conditions. Factor one of the factorial design was inanimate stimulation. Groups (N=3) in the enriched condition (E) were housed in large, clear cages (19 x 10 ½ x 6 ½ inches) and were provided with toys. Groups (N=3) in the impoverished condition (I) were housed in small, opaque cages (11 ½ x 7 ½ x 5 inches) in the absence of toys. The difference in cage size was chosen to increase any effect the presence of toys might have on the

enriched group. Factor two was social stimulation whereby mice in the social condition (S) were group housed (each social group consisted of one male triplet), whereas mice in the nonsocial condition (N) were singly housed. All four post-weaning environments, enriched/social (E/S), enriched/nonsocial (E/N), impoverished/social (I/S), and impoverished/nonsocial (I/N) are shown in fig. 2. Corncob bedding was used in all cages and mice had unrestricted access to water and mouse chow (Lab Diet 5015).

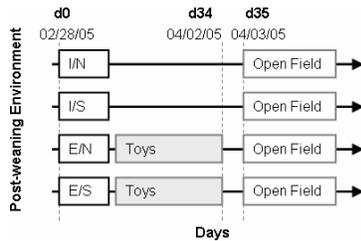


Fig. 1. Schematic representation of the experimental protocol.

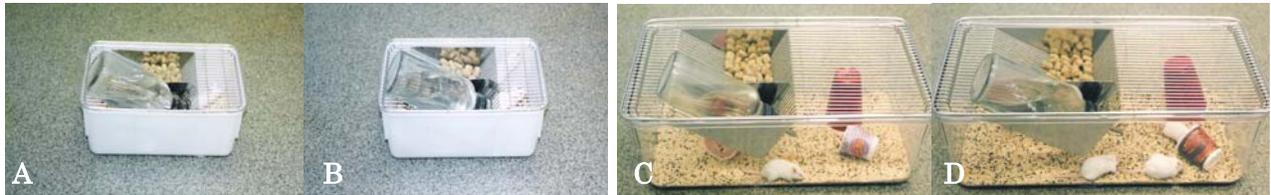


Fig. 2. Post-weaning environments: (A) I/N, (B) I/S, (C) E/N, (D) E/S.

All cages were placed on the same shelf unit (see fig. 3) and kept in the same laboratory room (T: 74° Fahrenheit; 12:12h light-dark cycle, light on at 6.00h). They were checked daily for food, water, and the well-being of the mice. Additionally, E was provided with new toys three times a week. The first set of toys was placed into the cages on Monday February 28, 2005 and the placement of the toys was recorded. At the time of toy exchange, every Monday, Wednesday, and Friday, the location of the replaced toys as well as the new toys was recorded. Keeping a record of toy movement allowed the researcher to observe whether mice manipulated the toys. No toys were placed into the cages of I. The open field (OF) test was conducted on d35. Animal housing and all experimental procedures were carried out in accordance with the University Committee on Use and Care of Animals (UCUCA).



Fig. 3. Cage arrangement in the shelf unit was according to the inanimate component of the post-weaning environment: I was placed on the right, and E was placed on the left. Post-weaning conditions of different social stimulation, S versus N, were placed on different shelves, top and bottom shelf, respectively. The enriched cages were separated by black construction paper. This ensured that mice across all conditions could smell and hear but not see mice in other conditions.

Materials

Four large and four small plastic cages with metal lids were used. Several sheets of black construction paper were used to block the view between adjacent large cages (see fig. caption 3 for detail). All toys that were used in E are listed in the Appendix.

Fifteen minutes prior to the open field test, a movable cart was used to transport all the cages into the room adjacent to the experimental room. Additionally, three separate holding cages were used to separate S mice prior to OF testing. Each mouse was transported from its cage to the open field and back using a pair of tweezers and a metal carrying container. Another pair of tweezers served to retrieve the fecal boli from the open field.

The open field apparatus consisted of a square arena (18 x 18 inches) which was enclosed by continuous 12-inch-high walls made of clear plastic. The walls were covered with black construction paper, whereas a white poster board was placed underneath the clear plastic floor. Black lines on the poster board marked three distinct areas (see fig. 4). Overhead room light illuminated the arena of the open field. A CANON ZR-65 DIGITAL CAMCORDER was placed 4 feet above the arena to videotape the open field trials. Subsequently, five stopwatches were used to encode behaviors.

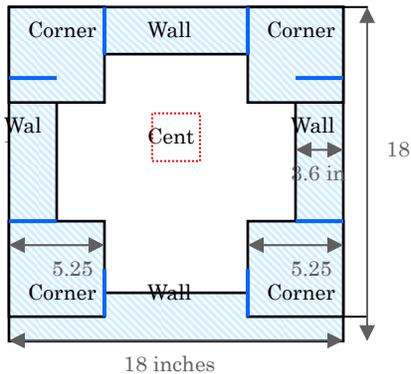


Fig. 4. Schematic representation of the OF indicating three different areas: corner, wall, and center. Each area has a surface area of approximately 108 inches². The corner and wall area combined made up the periphery (in light blue). The dark blue lines represent peripheral lines. The small-inset square (in red) in the center served as placement area for each mouse at the initiation of the OF test.

Open Field Test

Animals were tested during the light cycle, 12.00 to 2.00h. The test was initiated by retrieving a single mouse by its tail from the home cage. The mouse was carried inside a metal carrying container into the experimental room, where it was picked up by its tail and placed into the center square (see fig. 4). The mouse was videotaped for six minutes in which it was allowed to move freely around in the OF. After six minutes, the mouse was carried back to its home cage inside the metal carrying container. Fecal boli were counted and their placement within the OF was recorded. Then the arena was cleaned with a washing fluid and a paper towel. In-between trials the metal carrying container was rinsed with water. S mice were separated to ensure that no mouse was tested twice. Subsequently, observers, blind to the experimental condition of the mice, analyzed the first five minutes of each videotaped trial, and recorded the behaviors relating to emotionality. All behaviors and the corresponding definitions are presented in Table 1.

Table 1.
Ethogram of the Behaviors in the OF

Behavior	Code	Operational Definition
<i>Crossing</i>		
1. Attempt Crossing	ATTx	Behavior in which a mouse in the periphery engages in risk assessment by stretching the fore feet and head across a peripheral line (line not toward the center), while the back feet are stationary. The behavior is completed when the mouse steps back using its front feet.
2. Full Crossing	FULLx	Straight locomotion behavior in which a mouse crosses a peripheral line with all four feet. This behavior does not include any turns by which mouse crosses one line with its four feet.
<i>Duration</i>		
1. Duration Center	DCenter	Is the total amount of time spent in the center.
2. Duration Corner	DCorner	Is the total amount of time spent in the corner area.
3. Duration Wall	DWall	Is the total amount of time spent in the wall area.
<i>Frequency</i>		
<i>Moving the front feet and head across a line is referred to as entering:</i>		
1. Center Frequency	FCenter	Is the frequency in which the mouse enters the center.
2. Corner Frequency	FCorner	Is the frequency in which the mouse entered any corner.

Results

Qualitative Results

The recordings of toy movement in E indicated that the mice were manipulating the toys in several different ways. They pushed toys such as the ping-pong balls, the oval eggs, and glass marbles around. They used the sets of paperclips for climbing and disassembled these sets to varying degrees. Furthermore, the mice chewed on the pen caps and repeatedly carried them to their nest sites. Across the duration of the experiment, it was noticed that mice approached the new toys faster and did not run away when new toys were placed inside the cage.

The OF indicated clear behavioral differences between mice in the I/N group in comparison to mice in the other three groups (I/S, E/N, E/S). On one hand, the overall activity level of the three mice in the I/N condition was low. Furthermore, two of the three I/N remained in the same corner throughout the whole five-minute period of the OF test. On the other hand, mice in the other three groups were very active as indicated by their locomotive activities. Additionally, they engaged in grooming behavior which had not been observed in the I/N group. Interestingly, rearing without support in the wall area was only observed in S.

Quantitative Results

Data were analyzed using a two-way analysis of variance. In terms of FCorner, the effect of social stimulation depended on the level of inanimate stimulation, $F(1,7) = 10.56, p = 0.014$ (see fig. 5). For N mice, inanimate stimulation affected the frequency of corner entry, $F(1,7) = 15.36, p = 0.006$. The average frequency was higher for E/N mice (Mean = 40.33) than for I/N mice (Mean = 4.67). For S mice, inanimate stimulation did not affect FCorner, $F(1,7) =$

2.08,

$p = 0.193$. Furthermore, inanimate stimulation affected FULLx, $F(1,7) = 7.09$, $p = 0.032$ (see fig. 6), whereas social stimulation had no effect, $F(1,7) = 0.164$, $p = 0.698$. E mice (Mean = 57.67) had a higher average number of full peripheral line crossings than I mice (Mean = 16.00).

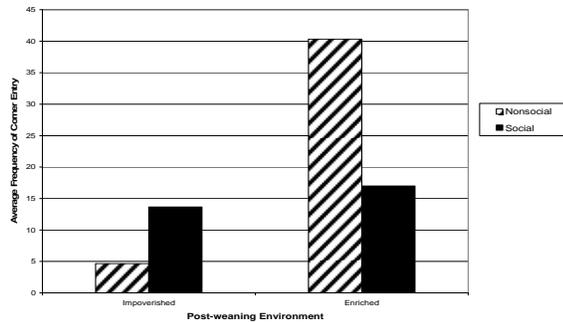


Fig. 5. Average number of times the mice in the four post-weaning conditions visited any of the four corners.

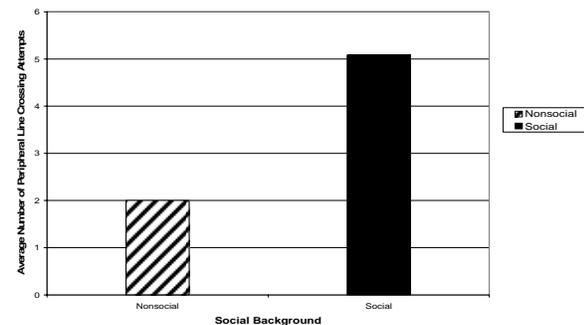


Fig. 6. Average number of ATTx across the two levels of social background (N versus S).

The social environment affected ATTx, $F(1,7) = 25.25$, $p = 0.048$. S mice (Mean = 5.08) had a higher average number of peripheral line crossing attempts than N mice (Mean = 2.00). However, the inanimate background had no effect, $F(1,7) = 1.50$, $p = 0.260$.

Neither social [$F(1,7) = 1.28$, $p = 0.295$] nor inanimate stimulation [$F(1,7) = 2.15$, $p = 0.186$] had a significant effect on FCenter. Nevertheless, the data showed a tendency across the four post-weaning conditions, in which FCenter was smallest in the I/N and greatest in the E/S condition, and greater in the E/N than in the I/S.

The data on the duration spent across the three different open field areas (center, corner, and wall) did not yield any significant effects. Consequently, neither the social [$F(1,7) = 0.36$; $F(1,7) = 1.08$; $F(1,7) = 4.07$; respectively, $p > 0.05$] nor inanimate stimulation [$F(1,7) = 1.00$; $F(1,7) = 0.84$; $F(1,7) = 0.08$; respectively, with $p > 0.05$] had a significant effect on those variables. However, for DWall, the data showed a strong tendency that E mice (Mean = 49.23) spent more time in the wall area than I mice (Mean = 19.20). Furthermore, neither inanimate [$F(1,7) = 0.003$, $p = 0.960$] nor social stimulation [$F(1,7) = 0.22$, $p = 0.654$] had a significant effect on Pellet.

A Chi-square analysis across the four environmental conditions, I/N, I/S, E/N, E/S, revealed that mice did not spend equal amounts of time in the three different areas of the open field,

I/N: $\chi^2 = 479$, I/S: $\chi^2 = 352$, E/N: $\chi^2 = 297$, E/S: $\chi^2 = 287$, $p > 0.05$. All mice preferred the corner area to the wall area to the center. Nevertheless, a tendency is apparent indicating that strength of preference decreases from I/N, I/S, E/N to E/S.

Discussion

Interpretation of Findings

In accordance with previous studies (e.g. Pietropaolo et al., 2004; Roy et al., 2001) it was found that there are behavioral differences between mice reared in a standard cage environment (I/N) and mice reared in “enriched” environments (such as I/S, E/N, E/S). Furthermore, the results support previous findings indicating that the two components, social versus inanimate stimulation, affect emotionality differently rather than having an additive effect. On one hand, FCorner was significantly higher in E mice compared to I mice. This supports the overall hypothesis that inanimate stimulation increased the overall activity level. Additionally, FULLx was higher in the E than in the I condition. Both parameters (FCorner and FULLx) are positive correlated (N=11), $R^2=0.744$, $p=0.009$. This correlation supports the interpretation that the higher FCorner is, the higher is the activity level. On the other hand, the social component influenced the amount of exploration in the open field. Mice in the S condition had a higher ATTx value than mice in the N condition. This behavior can be interpreted as exploration or risk assessment behavior. Roy et al. (2001) similarly interpreted the frequent head pointing behavior of “enriched” mice toward the open arms of a maze as exploratory and risk assessment behavior. In that study entering the open arm of the maze involved leaving the protection of an enclosed arm; parallel in the current study, entering another peripheral segment usually involved leaving the protection of the corner.

The differential effect of social and inanimate stimulation is also supported by the interaction effect of these two environmental components on FCorner. Under E, the FCorner was significantly increased in N mice, whereas it was not the case in S mice. If the social and inanimate environmental components cause an additive effect, no such interaction should have been found.

DWall, DCenter, and DCorner did not show significant differences across groups, thus the level of thigmotaxis was similar. A possible explanation is that the illumination of the OF arena was too high. Roy et al. (2001) found that mice from different rearing conditions behave similarly if a high illumination creates a ceiling effect. Thus, it is likely, that thigmotaxis did not differ since the illumination of the OF caused too much anxiety across all four groups. This interpretation is supported by the strong trend of the parameter DWall. There was no significant effect across the environmental conditions but it indicated that E mice spent more time in the wall area than the I mice. The assumption is that the wall area, a part of the periphery, provides more protection than the center, but less than the corner; and that E mice have lower anxiety than I mice.

In accordance, with previous studies (Pietropaolo et al., 2004; Roy et al., 2001), there was no difference of PELLET across the four environmental group. This supports the view that fecal boli is not a reliable measure to evaluate anxiety.

Strengths and Weaknesses of the Design

The study had several strengths and weaknesses. Among the strengths was the fact it was based on 2x2 factorial design, which allowed researchers to assess the effect of each factor individually, as well as the effect of both factors combined. This was beneficial since the mechanism of influence is still not fully understood. Another strengths was that only one researcher replaced the toys. It has not been investigated whether indirect interaction (as in

smelling different odors by exposure to varied researchers) has to be considered a type of “enrichment,” which might cause the impoverished group to perform better than expected.

Among the weaknesses was the small N size. The greater the N size is the more likely it is to identify differences between groups. Additionally, it provides the possibility to exclude data of outliers. Second, another weakness was that this study did not control for the effects of exercise. It could be argued that E mice engaged in a higher level of exercise since they are housed in larger cages and are provided with toys. However, Bronikowski et al. (2001) showed that voluntary exercise might not lead to changes in OF behavior. Third, a female mouse had been assigned to the E/S group. Thus, the intended male triplet consisted of two rivaling males and one female reaching maturity. Unaware of this assignment mistake, the female became pregnant and gave birth to six pups on d27. The researchers placed the two males in a new cage adjacent to the cage holding the female and pups to ensure the safety of the pups and avoid rivalry between the males. However, on d35 one male was found dead in the cage indicating the climax of male rivalry. One reasonable explanation of this event is provided by a study on super-enrichment, which indicated an increase in aggression of males reared in a super-enriched environment (Marashi et al.). Overall, the E/S group was not only lacking a member (N=2), but additionally had a lactating female. Previous research indicated that oxytocin, a hormone present in lactating female rats, has an inhibitory effect on learning and memory (Wu & Yu, 2004). It was not known to the researchers what effect this hormone will have on the performance in the OF. Nevertheless, researchers decided to test the female in the OF in order to allow a two-way analysis of the data. Finally, due to experimenter error one E/N mouse needed to be retested in the OF since a recording error occurred during the first trial. Data of the rerun did not look exceptionally different from the other data in E/N. Thus, it seems fair to assume that habituation had not occurred.

Ideas for Future Research

The current study had limitations but provided several ideas for future research. First, the replication of the current study should address its weaknesses (described above) and incorporate the assessment of other behaviors (i.e. memory and learning, as analyzed by the Morris Water Maze). Additionally, other paradigms such as the elevated T-maze, the Hole-board Test, or the Marble Burying Test should be included in the assessment of anxiety across the four environmental conditions. This approach could provide a better and more reliable understanding on how the social and inanimate component of an enriched environment influence the behavior of mice.

Second, the 2x2 factorial design (two levels of social stimulation, and two levels of inanimate stimulation) could be enhanced by adding another factor, thus creating a 2x2x2 factorial design. The third factor would control for exercise, which was not addressed in the current study. Consequently, the study would consist of two levels of the social component (social versus nonsocial), two levels of the inanimate component (enriched versus impoverished), as well as two levels of the exercise component (large versus small cage).

Another approach for a future study could be the analysis of the hormone levels in the brain across different post-weaning environments (e.g. I/N, I/S, E/N, and E/S). Researchers could focus on assessing the levels of anxiety-related hormones (such as corticosterone) as well as hormones that are involved in neurogenesis (such as nerve growth factor).

Last, researchers could focus on investigating whether structural differences among the groups can be found and whether the extent of brain plasticity varies according to the type of

enrichment (social versus inanimate) and/or according to different brain structures.

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Appendix

A combination of one big Lego and two small Lego's; "butterfly-shaped" paperclip; five-sided, opaque dice (discontinued); glass bottle; glass marble; Lego's (small and big); oval egg; paperclip (small, medium, and large size); paperclip with black top (open and closed); paper cup (small and medium size); pen caps; ping pong ball; plastic cup (large size); PVC pipe; coin (quarter).

Writing ‘Obscenely,’ Writing Academically: Women’s Studies and the Practice of Autobiographical Writing

Katie Livingston

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Introduction

The discipline of Women’s Studies is activist in nature; that is, it is rooted in a political movement to examine the intersections of race, class and gender in order to improve women’s lives. Feminists see research, especially writing, as critical literacy; in taking back the means to produce knowledge, women can see and explain the realities of our own experiences and the shared experiences of some women and begin to change those realities. Adrienne Rich writes, “Women have often felt insane when cleaving to the truth of our own experience. Our future depends on the sanity of each of us, and we have a profound stake, beyond the personal, in the project of describing our reality as candidly and fully as we can to each other” (190). It is important for me as a feminist to use the privilege of being in the university to do work and writing that will improve the lives of queer people, to change the university so that queer people are included.

Feminist researchers are those studying the culture of women, including queer people. As people who study culture “... our job is not simply to pass on the disorderly complexity of culture, but also to hypothesize about apparent inconsistencies, to lay out our best guesses, without hiding the contradictions and instability” (Wolf 129). My tensions, my multiple subjectivities, compel me to write self- reflectively in my research, to “... include [myself] in what we know by writing [myself] into what we say”(Bleich 41). The only way I have found room for myself within the traditional university without losing my non- academic voice, is by attending to my subject positions as a white, queer woman doing research within the untraditional field of Women’s Studies.

In the preface to Borderlands/ La Frontera, Gloria Anzaldua talks about this with her concept of borderlands: “... the Borderlands are physically present wherever two or more cultures edge each other, where people of different races occupy the same territory, where under, lower, middle and upper classes touch, where the space between two individuals shrinks with intimacy” (#). I attend to my Borderlands by “switching codes” (Gilyard 13). In much the same way as Anzaldua switches “... from English to Castillian Spanish to the North Mexican dialect to Tex- Mex to a sprinkling of Nahuatl to a mixture of all these” I switch within and between more traditional scholarly writing, critical reflection and strictly autobiographical writing. I weave back and forth between them. This queer mixture, this hybrid text “... reflects my language, a new language—the language of the Borderlands. There at the juncture of cultures, languages cross- pollinate and are revitalized; they die and are born.” I use personal experience when there is no other way to theorize my life because I believe they can’t be separated—theory and life—they are one in the same.

In writing about myself, I form relationships with many audiences that I would not interact with in a more traditional text. My audiences include the traditional Honors College, the discipline of Women’s Studies, and people from the queer community. In thinking about audience, I must also acknowledge that my parents cannot, will not ever read this; they would be so ashamed if I were to use the personal in my writing for school. I also worry that the

knowledge I create will not be seen as legitimate, that it will be called too personal, but because of these Borderlands, which are particular to being a queer woman, I must write beginning with myself. The desire to be seen as both alternate and legitimate, to address all my identities, as a woman, as a queer person, as a feminist and as a writer make it imperative that I ask these questions, that I write, and in writing I help “queer” the university into forming new ways of knowing.

Feminist Theory & the Women’s Studies Classroom

Feminist theory begins with the premise that subject position is everything; who I am shapes what I see and know. Western feminist thought and the Women’s Studies classroom are rooted outside the university in the U.S. Women’s movement, a political movement to examine institutionalized sexism and the intersections of race, class and gender. The position of Women’s Studies as a discipline rooted in a movement for political change requires that Women’s Studies attempts to “...bridge the traditional gap between theory and praxis,” to use methods and engage in scholarship that are activist in nature (Williams 6).

For these reasons—the belief that my subject position shapes my knowledge and the desire within Women’s Studies for methods that reflect this theory, as well as because of Women’s Studies’ critique of traditional academic practices, the Women’s Studies classroom employs a dialogical and reflective approach, which allows people to frame their own experiences. Feminist theory follows that “... personal background is not an incidental fact of the research but that which, quite complexly, shapes the process of searching and discovering” (Freedman & Frey 2). That is, who you are, your subject position, shapes what and how you know. As a result, it becomes crucial to understand this position, in order to understand the potential biases and/ or predispositions inherent in a project. Critiques of supposing objectivity in traditional scholarship, like the work of legal scholar Patricia Williams, also inform feminist theory and compel the Women’s Studies classroom to have a methodology rooted in this self-reflective approach.

Adrienne Rich writes, “Our struggles can have meaning and our privileges—however precarious under patriarchy—can be justified only if they can help change the lives of women whose gifts—and whose very being—continue to be thwarted and silenced” (3). In refusing to be silent about my experiences and how they shape my ideas, and in putting my community at the center of research, I not only give license to other marginalized people to write, but also shift the way we think about the creation of knowledge. In an autobiographical essay entitled, “Who Do I think I Am,” I write about how my subject position “... as a woman, as a queer person, as a feminist and as a writer” affects how I approach research.

Once a month my father comes to visit; once a month I lesbian sex- proof my room.

The phone rings and I answer, groggily. It’s my Dad, always early. He’ll be here in an hour. I sit up in bed, messy- haired and grumbling. Lindsey is clearly amused. I scan the room for offensive lesbian paraphernalia, though I realize it’s hopeless.

My life is obscene. I am obtrusively queer. And besides, my Dad knows I’m a big dyke.

Lesbian sex- proofing always begins in the bookshelf. I could talk exhaustively about the erotics of education, but it’s something I’d rather not share with my father. I don’t want him to know what they’ve been teaching me in school about desire and possibility.

On Our Backs lesbian sex magazine, Diva! For the Lesbian in You and “Sex Toys 101” are the first to go.

Next, a photo essay called, “Naked Women.” Is it porn? Is it art? I have no time for this.

My father wouldn't know who Audre Lorde was if she smacked him over the head with a dildo, so she can stay. Likewise, Ani DiFranco. Dad and Ani have had an agreement ever since he heard me singing her songs in the car and asked if I wanted to be the next Joan Baez.

I think I'm finished.

Lindsey watches all of this and then gathers her bags to leave. She doesn't wait for my awkward moment of indecision.

My girlfriend is a chubby, tattooed dyke. She is so obviously identifiable with her red mohawk and sensible shoes that people are often intimidated. But this isn't why I won't let her meet my father. Really, she's the only secret I have anymore, and I want to protect her like a treasure.

She's the most empathetic, kind person I know—she cries when I'm upset, she's very sensitive to the environment. She burns in sun, wind and rain. I'm afraid the climate for chubby lesbians with my parents is just not what it could be.

I collapse in my computer chair, exhausted, and notice the screen saver of a fat woman--breasts sagging, arms stretched over her head, wearing only a smile. I deliberate briefly and decide she can stay. Our world needs more images of women who aren't plastic.

Everywhere I look there's queerness, obscenity. It's inescapable, intricately woven into everything I do—The Vagina Monologues, lesbian safe sex seminars, drag...

My queerness, my obscenity are woven into my academic life—my research, my writing. Within the discipline of Women's Studies, I must write self-reflectively in order to create knowledge that is rooted in my own experiences, to create a space for lesbians within feminist scholarship. In much the same way as I must manage multiple identities—both as a daughter and as an obscenely queer person, the discipline of Women's Studies must manage the identities of being an untraditional (obscene) discipline within the traditional university. The discipline of Women's Studies is seen as obscene within the traditional university because it attends to subject position; it places women at the center of research much like self-reflective writing places the Self at the center.

Even within the field of Women's Studies, some scholars hesitate to write personally. I write about my obscenity to illustrate these tensions—the positions of Women's Studies as both an obscene and an academically rigorous discipline. I maintain that because women, queer people, people of color's experiences have historically been invisible or defined as “other” in relation to the dominant (straight, white, male) culture, it is necessary for marginalized people to take up the creation of knowledge. As Bell Hooks writes, “How could I forget that fundamentally the purpose of my knowing was so I could serve those who did not know, so that I could learn and teach my own—education as the practice of freedom” (62).

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Relationship Between Gender, Spatial Experience, and Ability to Reverse Ambiguous Object Figures

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Gender based research in the fields of psychology, sociology, biology, biochemistry, neurology, and anthropology concur that as groups, men and women, each have some unique behaviors and attitudes common to their specific sex (Brannon, 2002). Numerous intellectual ability tests have been applied and analyzed. In certain tests, results have indicated that some distinctions exist between males and females in respect to aspects of spatial, verbal, and quantitative abilities. Generally, these tests indicated that females score higher on measures of verbal fluency, while males are more likely to demonstrate a greater spatial ability; especially on tests that involved the rotation of a three-dimensional figure (Linn & Petersen, 1985; Masters & Sanders, 1993). However, these results were from a US population; in several studies conducted in other countries, there was not a consistent difference between the genders in terms of math/science and language/verbal ability, and in some cases females tended to demonstrate higher or equal spatial and mathematical skills (Feingold, 1994). However, merely observing differences between males and females does not tell us whether these differences are biological or sociological.

A large corpus of research shows that gender differences are, in part, a result of different life experiences for males and females; experiences that are culturally expected. Society expects girls to be more passive and boys to be more active, and in general, conformity to the expected norms is selectively reinforced (Kagan, 1964). As relevant to spatial objects, it is assumed that boys more frequently participate in activities that strengthen spatial skills, when compared to girls. It is also indicated that children with higher levels of experience with object manipulation and visual tactile exploration would have an advantage on tests of spatial ability (Tanner & Inhelder, 1958).

Ambiguous-object figures were the test device used in a child study that discovered three to four year olds have a near complete inability to reverse ambiguous figures (Rock, Gopnick, and Hall, 1994). However, this study raised more questions, since, although it classified the children by age, researchers did not classify each group by gender. So the results of the study may have been incomplete, since it is unknown whether the few children in the three to four year old group who could reverse were male or female; or if the group was equally divided across male and female; or if experience with visual-spatial tasks were accounted for. Also, the study suggested that increase in chronological age produced a marked increase in the ability to reverse among children. However, whether increases are more pronounced among a specific gender group remains an empirical question. Furthermore, a leading expert in the field of illusions, Dr. Daniel Chandler, acknowledged the lack of research in the area of gender differences in the visual perception of ambiguous object figures. (personal communication, March 14th, 2004). The apparent void supports the need for further research that could possibly reveal the existence of gender differences as relevant to visual perception.

This study utilized ambiguous-object figures to further examine the existence of similarities/differences between men and women. This research investigated gender differences

in the ability to accurately reverse ambiguous-object figures. The research also recorded the reaction time necessary to reverse from the first image accurately described to an accurate description of the second image for each participant, if the participant did indeed perceive the second image. The comparing of response times and the comparing of ability to reverse, by gender was employed to offer insight into possible variations in gender ability for this particular task. This study could possibly produce gender specific results, since certain tests of intellectual ability have suggested differences between the genders as relative to spatial, verbal and quantitative abilities.

Due to the higher score results produced by adult males during spatial tests (Linn & Petersen, 1985; Masters & Sanders, 1993), I hypothesized that a larger number of males than females will perceive both images in the ambiguous-object figures, and that they will do so at a faster rate. Moreover, since ambiguous object figures are spatial in design, it is a possibility that individuals possessing a higher degree of spatial ability would reverse at a faster rate. Persons with greater spatial interest might also tend to have an increased success rate in reversing (greater percentage of figures reversed). In order to test this, a demographic survey contained items asking participants to indicate frequency of participation in tasks generally held to be spatial in nature for both childhood activities as well as their present activities and interests. I hypothesized that these individuals would have an advantage at achieving a greater percentage of reversals, and overall, would record better reversal times, when compared to another participant who had a lesser degree of spatial interests.

Method

Participants

A total of 71 undergraduate students from University of Michigan – Dearborn participated for class credit. Of the 71 individuals obtained from the subject pool, two sets of data were thrown out, because these respondents failed to follow the basic premise of the study. Of the 69 participants that remained, 35 (50.7%) were males and 34 (49.3%) were females. Age of participants ranged from 18 to 48 ($M=20.32$; $SD=5.05$).

Materials

This study employed the use of 16 ambiguous-object figures (see fig.1 for an example) and 19 non-ambiguous figures. Of the ambiguous figures nine were black and white and seven were colorized. All stimuli were presented over a 15-inch Dell monitor and were centered on the screen. The stimuli were presented using E-Prime research software (2002). Accuracy and reaction times were collected via standard Qwerty keyboard as well as SV-1 voice activation key (Cedrus Corporation, 1999). Of the 19 non-ambiguous figures four were used in a practice session designed as a hands-on method to clarify the verbal and visual instructions of the experimenter. A questionnaire that included basic demographic questions (i.e., age, ethnicity, etc.) was administered post-experiment. The questionnaire also contained items designed to rate possible spatial ability on a five-point Likert scale, with “1”, indicating “never” and “5” indicating “very frequently”. The questions focused on childhood activities of the individual, as well as their current activities, and interests. Several of the items included were filler questions that did not deal with spatial abilities. These were employed as a method to avoid possibly revealing the purpose of a portion of the study. Additionally, the experimenter employed the use

of a response sheet for each participant, so analysis of correct responses could later be conducted. Wave form editing software was also used to record the whole session in case the experimenter did not hear a given response. This way, the participant's response could be played back later and recorded on the response sheet. The wave form software was also employed as a method to adjust incorrect response times.

Figure 1. Ambiguous-Object Figure: Saxophone Player/Female Face.



Design

In selecting the four figures in the practice session, the experimenter chose simplistic, non-ambiguous images that could be easily identified by the participant. Ambiguous figures were not deployed in the practice session because the experimenter did not want to reveal the true nature of the study. The 31 figures that comprised the actual study were more detailed than the four figures presented in the practice session. The 31 figures were pseudo randomized by the experimenter and presented in the same order to all participants. The first two figures presented were non-ambiguous in yet another attempt to avoid revealing the true purpose of the study. The remaining figures were selected to appear in no particular order.

The current study presented stimuli through the use of a computer. This allowed the experimenter a method to obtain data on the reaction time necessary to accurately reverse the various ambiguous-object figures. Each figure, ambiguous and non-ambiguous, was presented to the viewer for a total of 30 seconds. The onscreen prompt, "anything else", flashed for 350 milliseconds after the first response was made, or after the allotted 15 seconds expired if no response was given. For the second response, the onset of the participant's voice (or the expiration of 15 seconds) served to activate the three-second fixation between figures.

Procedure

The participant was seated in front of the computer and fitted with the Cedrus SV-1 headset. The experimenter explained that the participant would view several images, one at a time, and that they were to briefly describe what they were seeing. Participants were asked to press the spacebar after they finished describing the image. Upon pressing the spacebar a prompt would flash "anything else?" and would then return them to the image for further viewing. This process offered the participant an opportunity to describe any additional images that were seen within the figure. The experimenter also advised participants to speak the phrase "nothing else" into the headset if indeed nothing else was seen. The participants were not informed that several of the figures were ambiguous in design and could be seen in more than one way. Instead, they were told that if they happened to see more than one image within a figure, then they were to briefly describe one image, press the spacebar, and then describe the other image into the voice-key. If the participant did not have any questions they were instructed to begin the four-slide

practice session. During the four-image practice session, the experimenter closely monitored the participant to ensure they understood the task. If not, the participant was provided with feedback from the experimenter, so the individual would clearly understand the required process. Next, a slide appeared on the computer screen to convey that the practice session had ended, if there were no further questions, the participant was advised to press the spacebar, and the actual study would begin. After the participant pressed the spacebar, the experimenter began to manually record their responses into a notebook. This would allow their responses to the images to be reviewed at a later date, to discover if the participant correctly identified both images within the various ambiguous-object figures. Once the computer portion of the study was completed, the experimenter informed the participant that there was a final segment to the study. The individual was then instructed to follow the experimenter to a table. The participant was then asked to complete a short written questionnaire.

Results

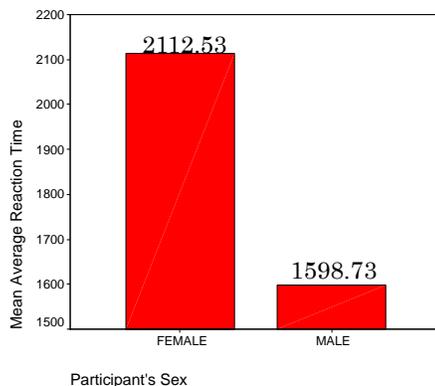
Responses to the 16 ambiguous-object figures were examined to determine the frequency of accurate image reversals for each participant. An overall score of correct reversals was assigned to each participant with potential values of “0” indicating “no correct reversals”, to “16” conveying “one-hundred percent accuracy in reversing.” The sample results ranged from 0 to 13 ($M=7.51$; $SD=3.10$) for number of correct reversals. The number of correct reversals was then broken down by participant gender.

Participants’ reaction times to accurately reverse from the first image to the second image were also recorded. This measure was calculated by taking the reaction time data that was recorded in E-Prime on the 1,104 reversible figures and then eliminating the 586 figures where the participant failed to correctly identify both images. Of the 518 remaining figures that were successfully reversed, an additional 70 (45 male; 25 female) responses were removed, since on these responses the participants had failed to follow the instructions and separate their answers by pushing the spacebar. After completing this process there were 448 accurate responses remaining. It was these figures that the experimenter used to examine length of time required after describing one image in the figure, to accurately describe the other. Reaction time to these figures was averaged for each of the participants that remained. Seven (7 females; 0 males) of the reaction times required manual adjustment through the use of wave form editing software. Alteration of the times was necessary because the voice activation headset had incorrectly recorded response time to the second image. The correction was completed in a multiple step process. First the experimenter opened the wave file and located the inaccurately recorded response for the particular participant. These were the responses given, but repeated because the voice key did not activate when the answer was first given. Next, the experimenter measured the time from the onset of the initial verbal response back to the onset of the second response given for the previous figure. The difference between the two, in milliseconds, was then added to the “Stimulus.TargetOnsetTime” for the corresponding figure in E-Prime, and the resulting number was inputted into the “Stimulus2.RTTime” column for the said response. Finally, the “Stimulus2.RTTime” was subtracted from the “Stimulus2.OnsetTime” and the resulting number provided the experimenter with the participant’s reaction time necessary to accurately reverse from the first to the second image.

Analysis on percent of accurate reversals revealed that females were more likely to correctly reverse the figures ($M=8.00$; $SD=2.74$), than males ($M=7.02$; $SD=3.39$). However, this difference was not statistically significant, $t(67) = 1.31$, $p = ns$.

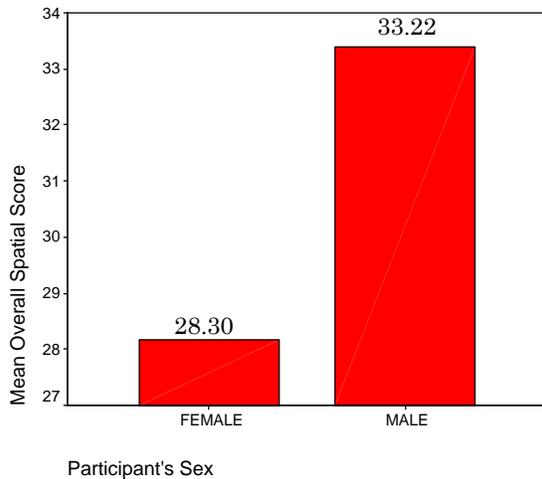
Participants' average reaction times for accurate reversals were submitted to an independent t-test by gender. Results revealed that males demonstrated faster reaction times ($M=1598.73$; $SD=798.77$) when correctly reversing images compared to females ($M=2112.53$; $SD=1098.22$), $t(63)=2.16$, $p < .05$. The means are displayed in Figure 2. This suggests that although there were no significant differences in percentage of correct reversals based on gender, average reaction time required to successfully reverse to the second image differed across gender.

Figure 2. The Mean of Participants' Average Reaction Time (Ms) to Reverse Ambiguous Figures by Gender.



The 17 items of spatial activities/interests from childhood and currently were correlated to one another to determine which items best reflect spatial activities and interests. Only correlations of $r = .30$ and better were accepted in this analysis. The experimenter discovered that ten of the items clustered together. These ten items from the two spatial activities inventories and one spatial interest inventory were summed together to form a single overall spatial score, with potential values ranging from “10”, illustrating “low in spatial” to “50”, conveying “high in spatial”. The sample results varied from 20 to 46 ($M=30.83$; $SD=6.09$). A Cronbach alpha of .71 was recorded. A correlation was then conducted on overall spatial score and gender. Results revealed a significant positive correlation between participant's sex and their overall spatial score, $r(n=69) = .43$, $p < .001$. The means are displayed in Figure 3. Thus, male participants were more likely to have a higher overall spatial score.

Figure 3. The Mean of Participants' Overall Spatial Score by Gender



A correlation was also performed on overall spatial score and participant's average time necessary to successfully reverse to the second figure. Results illustrated a statistically significant negative correlation, $r(n=65) = -.25, p < .05$. Therefore, as participant's overall spatial score increased, the average reaction time required to accurately reverse from the first image to the second image tended to decline across all participants, male and female. A non-significant relationship was revealed for overall spatial score and participant's number of correct reversals. In light of this finding, spatial score of female participants was then correlated to their average reaction time necessary to correctly reverse. Results conveyed a statistically significant negative correlation, $r(n=33) = -.36, p < .05$. So, as female participant's overall spatial score increased, the average reaction time to reverse typically decreased. Interestingly, a non-statistically significant correlation was indicated for overall spatial score of male participants and their average reaction time to accurately reverse from the first image to the second. This may have occurred due to a ceiling effect since, as a group, males' average reaction time was faster; therefore, a higher spatial score for males may not have produced the same effect that it did for females.

A multiple regression was then run, with the interaction between gender and overall spatial score entered first. The interaction term was centered by subtracting the mean from each participant's average reaction time, as instructed by Dr. McAuslan. As analysis indicated the interaction of the two variables was significant, $F(1,64) = 183.42, p < .001$. Specifically, participants that were male and had a higher overall spatial score, were more likely to accurately reverse the ambiguous figures at a faster rate.

Discussion

The current study examined the number of correct reversals as well as the time that was required to accurately reverse from the first image to the second. These two variables were analyzed by gender and a measure of the participant's overall spatial score.

Results of the study suggested that, in general, male participants demonstrated faster reaction times when correctly reversing and were more likely to have overall higher spatial scores. Moreover, females with a higher overall spatial score, as a group, correctly reversed ambiguous figures faster than females with a lower overall spatial score.

As predicted, when male participants successfully reversed the ambiguous figures, these participants tended to perform the function at a significantly faster rate when compared to the

female participants. This tendency for quicker reversal could be related to findings suggesting that males possess a slightly higher propensity to complete tasks that require spatial skills, and ambiguous-object figures are considered to be visuo-spatial in nature. Conceivably, males could have an inherent edge as relevant to spatial abilities when compared to females (Linn & Petersen, 1985; Masters & Sanders, 1993).

However, the higher level of spatial skill could also be a result of socialization factors. Socialization is also an important point to consider since research has indicated that this skill advantage is not found in males as consistently, if at all, in other countries (Feingold, 1994). In other words, it is possible that females in the U.S have succumbed to a self-fulfilling prophecy. Females may often become conditioned by society to believe that males score higher on math and spatial tests so many females may become less inclined to participate in the same degree of spatial activities/interests. It might be that females have limited opportunities as the result of parental, peer, teacher and media influence, thus their skills to successfully reverse ambiguous object figures at a faster rate are hindered by this process of conditioning. Moreover, the socialization argument is consistent with our results, indicating that females with a higher overall spatial score reversed the ambiguous-object figures at a faster rate, than females with lower overall spatial scores.

As predicted, participants that possessed a higher overall spatial score, required less time to accurately reverse ambiguous-object figures. It is feasible that this relates to their greater experience with numerous other spatial tasks. It is also possible that participants demonstrating a higher level of spatial interest were more likely to express a greater level of curiosity toward the task presented by the experimenter. This existing degree of curiosity might then demonstrate itself as a heightened level of involvement for the task at hand.

As the present study suggests, when males reversed ambiguous figures correctly, they did so at a faster rate than females. Participants that indicated a higher overall spatial score also demonstrated a faster rate of accurate reversal. Moreover, the interaction between gender and overall spatial score indicated that these two factors largely contributed to the reaction time required to reverse from the first image to the second. Although, the findings in this study indicate that males reverse quicker than females, the results also convey that females with higher spatial scores reversed faster than females with lower scores. This suggests that a faster rate of accurate reversal of the figures might demonstrate a lesser level of biological gender differences than is often suggested. Instead, the study results indicate a stronger possible connection between reversal accuracy and socialization toward spatial activities/interests. In light of these findings, and when compared to recent research on cultural conditioning, it is reasonable to suggest that socialization may play a significant role in the acquisition of spatial skills.

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A New Hat On An Old Jerkin: Petruchio as an Unconventional Hero in Shakespeare's *The Taming of the Shrew*

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“She is my goods, my chattels; she is my house/ my household stuff, my field, my barn,/ my horse, my ox, my ass, my anything” (Shakespeare 3.2.225-7). In these lines from William Shakespeare's *The Taming of the Shrew* (1593-94), the speaker, Petruchio, appears to be a typical male chauvinist, lording his power over his wife. Indeed, his mission to tame “the Shrew” might support the anti-feminist interpretation of this character, especially when Petruchio takes his new wife, Katherine, home and the real battle begins. However, does he really subscribe to chauvinist beliefs or is the above speech merely “played” for the benefit of those around him?

In Shakespeare's day, men were seen as the superior sex: rational, problem solvers, embedded in culture, independent, responsible, the keepers and protectors of women and children. Women, on the other hand, were viewed as inferior, unintelligent, irrational, irresponsible, passive, and in need of protection. Although they were given the responsibility of raising children, women were not even considered responsible for their own actions in a court of law. Instead, accountability for their actions was set upon the shoulders of their husbands or fathers.

According to these traditional views of men's and women's roles, a conventional hero would have looked down upon Katherine as an inferior creature and treated her as such, being especially scandalized by and scathingly critical of her outrageous behavior. In looking at his actions as well as his speech, though, we can see that Petruchio is much more complex than he may at first appear. Throughout his courting and marriage to Katherine, his actions do not support the traditional binary view of men's and women's roles held at that time. Instead, we have a man who does not speak to Katherine in demeaning terms, nor does he demean her when speaking to others. Though he scolds her for some of her behavior, he never strips her of her dignity; he even builds her up with positive comments about her beauty and personality, something none of the other men in the play have thought of doing. When her sister's suitors (and even her own father) scold Katherine and have no qualms about hurling insults and slanders at her, Petruchio calls her nothing but Kate, “bonny Kate,” and “sweet Katherine” (Shakespeare 2.1.185,270). Even when Petruchio takes Katherine home and her family is no longer present to observe him, he still shows respect for his wife. The harshness he shows her during these scenes is not the result of chauvinism, hatred, or vindictiveness. Petruchio uses harsh methods to tranquilize her until he and Katherine can eventually reach a compromise and an understanding. Even when “taming” her, he is sensitive to her needs and desires, rewarding her with his affection and with beautiful things when she ceases to be sour and behaves gently.

The first time we get a good look at what Petruchio is really like occurs when he and Katherine meet for the first time. This is in Scene One of Act Two, and Petruchio does not begin by thinking of ways to force this feisty woman into submission, although he has heard all about her shrewish nature and wild ways. Surprisingly, he decides to fascinate and tame her by captivating her with his wit and charm. Acting tenderly towards Katherine and capturing her interest by showing her a positive view of herself, he intends not to vanquish her but to win her over. He greets her pleasantly, saying “Good morrow, Kate,” rather than forcing her to defend

herself against a snide and slighting remark (Shakespeare 2.1.181).

This first seemingly insignificant greeting is important in two ways. First, the pleasantness of Petruchio's greeting indicates to Shakespeare's audience that he wants to please Kate and that he is going to treat her like any other person, like a regular human being; he sees no reason to treat Kate specially, be it because she is an angel or a demon. Second, he renames Katherine the Shrew in this greeting, calling her bonny Kate, as if removing her former, tarnished identity and giving her a new one that is free from all the ugliness associated with the old Katherine.

An additional point of significance in this brief line is that Petruchio actually addresses Kate by name rather than using the pejorative "Shrew" preferred by other characters. Recognizing her name rather than her label validates her as a person. She is used to her sister and the suitors demeaning her by avoiding the use of her name (replacing it with many other negative terms) or hearing her name spoken only reproachfully by her father. In Petruchio, she encounters someone who not only calls her by name, but one who speaks her name as though she has merit. No longer must she be "Katherine the curst", "an irksome scold", "stark mad or wonderful froward"; Petruchio has opened a door that allows her the choice of being "call'd plain Kate", "good Kate", "sweet Katherine" and "the prettiest Kate in Christendom", if she so desires (Shakespeare 1.2.120, 1.2.179, 1.1.69, 2.1.184, 2.1.203, 2.1.270, 2.1.186).

Once we get into the scene, it is dominated by a dialogue between Kate and Petruchio which reveals much about both characters. Both of them are intelligent, and full of humor and wit, too. Petruchio finds himself equally matched against Kate, who has a lively and intelligent response for everything he says. He has to work hard to stay on top of her, though he seems to enjoy both the challenge and the challenger, as the lines take on more and more of a sexual charge.

When Kate tries to put him off, Petruchio is only all the more fascinated. Called a joint-stool and an ass, he happily replies, "come, sit on me" (2.1.199). Eventually, Kate thoroughly tests his patience by hitting him after he says he is a gentleman. "That I'll try," she goads, but Petruchio checks his anger and leaves her with no more than a serious warning never to try it again (2.1.222).

This long exchange between Tamer and Shrew shows us what Petruchio is like in both intelligence and morals. Though Kate gives him a run for his money, she does not best him. Furthermore, when he emerges from a dialogue that would be a loathsome experience for most men, Petruchio's verdict is: "if she be curst, it is for policy"; he has seen through her disguise and realized the Kate is compensating for her lack of control over her life in the best way she knows how (2.1.295).

Realizing this to some extent, he gives her some power in their relationship (though not all!). Throughout the play, Petruchio speaks very suggestively to her, but makes no moves on her, despite the fact that no one else is around. In this scene (and throughout the entire play) all physical contact between them is initiated by Kate . . . even when Petruchio requests that she kiss him, he waits for her to act and does not steal the kiss, giving her power over that action.

Most significant of all, though, is that he does not respond with violence when she assails him physically (which would be the justified response to her behavior in Elizabethan times). Petruchio's self-restraint in this situation reflects very positively on his level of respect for Kate, since he has nothing to fear from her father (who wishes to be rid of Kate and is overjoyed that Petruchio desires to marry her), and because he would receive no denunciation or condemnation from the suitors if he were to strike back.

The second time we see Petruchio deviating from the role of a conventional man is after he has returned home with his bride. Though he seems harsh in refusing her the meal his servants have prepared and in denying her a night's sleep, wearing her down is the only way he knows to calm her enough to allow them reach an understanding. With all of his blustery behavior, he is providing her with an outsider's view of the type of behavior she herself often displays. He has become a teacher, showing her what she lacks in the way of sympathy towards others; though it is true that she herself has often been put upon and taken for granted, she has done the same to others in turn.

Unfortunately, it is a hard lesson: when she wishes to eat, he throws the food away as not good enough; when she wishes to sleep, he tears the bed apart, finding some fictitious fault with it, all out of so-called love for Kate. On and on it goes, until Kate learns she must give in to get what she wants, because being obstinate will get her nowhere. This is what Petruchio has been hoping to show her.

However, though he might appear mean-spirited, Petruchio himself informs us that he is more bark than bite: "He that knows better how to tame a shrew,/ now let him speak; 'tis charity to show" (4.1.187-8). He would do no harm to his wife if he had a better solution. His desire to be generous and loving is proven as they prepare to attend Bianca's wedding. When she desires to regain the privileges she has lost at any price, even acting subservient to her husband, Petruchio rewards Kate's behavior with his real affection and the beautiful things she desires.

Petruchio has been showing Kate how to play a game and has had to make his request as obvious as possible. "Look," he says, "what I speak, or do, or think to do,/ you are still crossing it" (4.3.191-2). He requires nothing more of her than agreement with him in word; it doesn't matter to him what she thinks to herself. "Say as he says," Hortensio coaches Kate, "or we shall never go" (4.5.11). When at last Kate catches on to the game, there is no better player than she:

"Then God be bless'd, it is the blessed sun.

But sun it is not when you say it is not,
and the moon changes even as your mind.

What you will have it nam'd, even that it is,
and so it shall be so for Katherine." (4.5.19-23)

Petruchio has succeeded. Finally, he is able to reward Kate completely. Though it appears to everyone else as if he has tamed the Shrew, he has really done nothing more than coax and prompt the goodness out of Kate, showing her how to obtain people's affection and respect within the boundaries of her prescribed role. This is society's game with men and women: you put a new hat on an old jerkin.

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Innocent Murderers of Medellín: Youth and the Colombian Narconovela

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The drug traffic novel and film have become a popular trend in Colombian culture, because they reflect myriad facets of drug violence which have permeated the society. The eponymous heroine of Jorge Franco Ramos's Rosario Tijeras (1999) and young sicarios (assassins for hire) in Fernando Vallejo's Our Lady of the Assassins (1999) are criminals who fall into the trap of killing early on, not because they necessarily want to live a life of crime, but because they are denied better possibilities.

I propose that Colombian fiction displays the person behind the sicario and indicates that the problem with violence in Medellín is not to be traced to juvenile delinquency, but to contemporary Colombian society, plagued by disintegration and violence. Medellín's poverty and lack of opportunity to earn a living are essentially linked to opening the path up for drug trafficking, which in turn creates the necessity for the sicario's occupation: killing. Through their protagonists Franco Ramos and Vallejo give insight to the humanity within the assassins. Both authors demonstrate the innocence of their killers by giving the reader a glimpse into their short and tragic lives.

First of all, it is important to establish that Rosario Tijeras and Our Lady of the Assassins accurately reflect the problem ridden Colombian reality. The author's fictional characters have several parallels to real young Colombian hit men, as documented by the sociologist Alonso Salazar in Born to Die in Medellín. Salazar interviewed and visited numerous sicarios, their families, priests and police officers that live in Medellín, and wrote about their experiences with urban violence incorporating their own testimonies.

Salazar states that citizens of Medellín live in a city in war, where the protagonists are the adolescents (17). Rosario Tijeras and Our Lady of the Assassins introduce us to three young killers who are actively participating in this war, but not because they chose to, but rather as a way of survival. Rosario Tijeras is named after its deadly heroine, who falls into killing for money as a way of supporting herself financially, and protecting herself physically, though in the end she still suffers a violent death. Our Lady of the Assassins presents two young sicarios, Alex and Wilmar, who are lost in life until Fernando, a middle-aged homosexual retiree, comes to their rescue and provides them with some security and comfort, although in the end he too is unable to save their lives. The story of these three adolescent murderers is unfortunately reflective of many youth in Medellín.

In Salazar's Born to Die in Medellín, we meet a young hired killer whose father has died during his adolescence. As a result, he has to find a way to financially support his mother and younger siblings. Unfortunately, with the lack of education and employment opportunities that plague Medellín, he becomes involved in delinquent activities in order to somewhat provide for his family (25).

It is very common for the young killers to have lost their fathers either through death or abandonment. Similarly, the fathers of the three protagonists in Rosario Tijeras and Our Lady of the Assassins are not present. The mothers live alone, raising by themselves many children often from different fathers. There is no male figure to instill discipline in the household and the mothers are often too overworked to be able to do it themselves. In other words, the traditional

family structure does not exist in the sicario's world.

Strangely, a paternal figure can only exist in the form of a lover as it is documented in Vallejo's novel. Fernando becomes a father figure for Alex and Wilmar through their physical and emotional relationships. Being mature and wealthy, Fernando is able to facilitate a better life for his delinquent boyfriends and helps them appreciate the importance of opera, beauty, and warmth. He shows them all that is lacking in their lives, so much that they are willing to leave the country with him in search of better opportunities and to escape the overwhelming presence of death. Unfortunately, they are not able to escape before untimely death reaches out for them in the form of gang-related revenge.

The only paternal figure Rosario has in her life is a stepfather who molests her when she is eight years old. Even after he moves out, he continues abusing Rosario sexually outside of her home. He follows her everywhere, until Rosario's older brother, Johnefe, attacks and castrates the pedophile. Growing up, Rosario has other violent experiences with men and she discovers that self-defense must be brutal, even if it means killing the opponent. Rosario's talent for murder flourishes, and with time she uses it to make a living in the position of sicaria, executing people sentenced by drug traffickers. Since, Rosario is a victim of her circumstances before she becomes a victimizer, it would not be fair to judge her crimes without considering her past replete with abuse.

Another similarity between the fictional killer's lives and their real-life counterparts is death, its constant presence, and sicarios' feelings towards this ultimate experience. According to the testimonies presented in Salazar's Born to Die in Medellín death is something natural and common to every day life in the mentalities of many young paid killers. Killing and dying is something normal in their eyes. Since violence is so frequent in Medellín, one becomes accustomed to it (200). This phenomenon is very clear in Our Lady of the Assassins. Everyday the youth can attest to a violent death in their city. Consequently, Alex and Wilmar get accustomed to violence at a very young age and are able to kill easily without much thought. Even Fernando, their mature and educated lover who is appalled by the relentless murders at first, slowly gets used to the killings through his relationships with the young murderers.

Now that we know Rosario Tijeras and Our Lady of the Assassins accurately represent reality for young killers in Medellín, it is worthwhile to examine underlying factors for the violence in the city. Guillermo Tell Aveledo states that it is not the violence that happens in Colombia, but rather Colombia happens in the violence. In other words, the people of Colombia are not solely responsible for the current situation, but outside factors come into play, creating the violence which permeated the country long ago. Logically, one would ask why Colombia suffers so much from violence, and if the killers aren't to be blamed entirely for the disorder then who is?

Many believe drug trafficking to be the main reason behind urban violence in Colombia. The cities that have the largest homicide rates, like Medellín, also have high amounts of drug trafficking, but the matter is not so simple (Bergquist 1). For example, the United States has given millions of dollars to the Colombian government to deter drug trading, but the money frequently goes to paramilitary funds that are responsible for eighty-five percent of the violations against human rights in Colombia ("Colombia: Country Profile" 2). Therefore, the drug traffickers aren't the only ones creating violent situations, but one should take into account groups supported by the government and financed in part by the United States. According to Charles Bergquist, drug trafficking has generated so much money in the Colombian economy that it has also saved Colombia from a worse economic crisis (4).

On the other hand, Yifat Susskind, the associate director of Madre, an organization that fights for women's rights, believes that Colombia is a country that has many other legal resources, such as gold, silver, oil and carbon. The problem is that the wealth is not divided fairly, and the majority of the population lives in utter squalor. Poverty is the principal problem in Colombia. Segregation between the poor and rich is evident in Our Lady of the Assassins, where the affluent live in the valley of Medellín and the poor live in the hillside. The average unemployment rate in Colombia is twenty-one percent and in some parts it reaches seventy-four percent. Furthermore, eleven percent of the population lives in absolute destitution ("Colombia's Conflict" 6).

This poverty creates the pathway towards violence in Colombia. The lack of jobs and money makes life very difficult in this country. Thus, people must resort to illegal professions, often the only way to earn a living. Salazar explains that the formation of the largest drug cartels in Medellín in 1975 coincided with the largest industrial and economic recession in the country (192-193), showing that Colombians only resort to crime when there are no other options. Unfortunately, drug related professions also lead to gang violence between competing cartels as well as police and drug lords.

A priest in Salazar's book argues that it is extremely difficult to negatively judge people that take part in criminal activities because of the unstable conditions of Colombian life. He explains how Medellín is a poor community, without any resources, so the youth become desperate and fall into delinquency (172). In other words, we cannot place all the blame on the sicarios because opportunities to help them develop into functioning members of society are scarce if any. One young assassin in Born to Die in Medellín comments that young people in Colombia know that studying and working will not benefit them, since they will always have to struggle to survive poverty. The rich sugar daddy, Fernando, from Our Lady of the Assassins also mentions the lack of economic opportunities, saying that it's not worth working or studying in Medellín. He explains that in order to find a job, one must have his own business, and with the exaggerated government taxes, it is too costly to be able to own a business. So, although Alex and Wilmar are killers and therefore are perceived as victimizers, they are also victims of a society which does not present them with any opportunity to succeed in life.

To make things worse, Colombia is also known to have a corrupt government which in many instances has committed violent crimes against its own people. At the same time, police some times sell illegal arms to violent gangs to make extra money (Salazar 90). A priest cited in Born to Die in Medellín believes that a major problem is the lack of authority in Colombia. He says that the people don't like the police because they have done much harm too (178). In the end, without support from the state it is very difficult to promote change.

To summarize, if parents are too poor to provide a good education for their children and assure that they stay safe, and if the government cannot help these families, who is going to help raise Colombia's children? Salazar states that gangs in many neighborhoods now play the role of socializer for children and adolescents, instead of their families (205). Perhaps the female assassin Rosario Tijeras wouldn't have lived such a short and violent life if her mother and teachers had taken care of her and given her a better education. Instead they neglected Rosario because despite her obvious need for support and direction there were too many other children for her mother and school to look after with few resources.

Unfortunately, many Colombians learn in early childhood that violence is a common experience and no one tells them differently. Even if mothers try to discourage violent behavior in their children, often with time they learn to accept it because they see the economic benefits of

quick and illegal money (Salazar 174). In general, Ana María Jaramillo argues that Colombian families lack love, discipline, authority and good role models (131). Rosario's family is a sad example of this. Her father abandoned her, her stepfather abused her, and her mother ignored her and did not show her any love. In Medellín the traditional processes of socialization are lost. They don't exist in school, in the family, or in the church (Jaramillo 130). Therefore, sicarios are not able to learn how to live safe and constructive lives.

In conclusion, Colombian fiction portrays part of a complex problem of violence in Medellín, and warns us that we cannot place all of the blame on one individual or social group. It's clear that the problem has more than one culprit, and it is derived from an ailing society that lacks the basic institutions and most fundamental services. Drug trafficking, the corrupt government, and wide-spread poverty are all part of a problem that contributes to the violence. In effect, fiction like Rosario Tijeras and Our Lady of the Assassins introduces us to the truth behind the lives of adolescent criminals in Colombia and opens our eyes to the problems that surround them everyday. In order to begin to understand violence in Colombia, we must understand sicarios, its victimizers, who turn out to be perhaps the country's biggest victims at the same time.

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The Ojibwa Midewiwin

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The Midewiwin religious movement and medicine society was central to the Ojibwa worldview. One of the most interesting facets of their culture included their ritual use of animals, especially dogs. Sacrificial dog burials have been found throughout their area of influence, the most recent example being at the 17th century Marquette Mission site in St. Ignace. The Midewiwin, and their rituals, served as a unifying element among different tribes. “The Society functioned to treat with Supernaturals about curing ailments. The curing procedures were, simultaneously, modes of instructing novices and adepts about the Mide rites’ origins in ancient revelations and about using the curing powers” (Landes 4).

The Ojibwa called themselves Anishnabe, which meant “first or original man”. Ojibwa may have come from the way their contemporaries referred to them; o-jib-i-weg (those who make pictographs) (Danzinger 7). Ojibwa was later corrupted by English into Chippewas, the name that they are commonly referred to (Warren 66). On seventeenth-century French maps, a form of the word Ojibwa identified a village on the north shore of Lake Superior, but use of the term expanded to include allied communities along the eastern side of Lake Superior. Depending on its division into syllables, the Ojibwa name has been interpreted as a reference either to the puckered toe of their distinctive moccasins or to their use of glyphs to inscribe historical and religious information as well as simple messages on birch bark or rock surfaces. The Ojibwa, Algonquian speakers, inhabited the Eastern Woodland area and the Subarctic, and subsisted mostly with a hunter gathering life. The Ojibwa lived in small kinship groups, assembling in larger groups at certain times of the year as part of an annual seasonal cycle. They seem to have preferred to hold their Midewiwin ceremonies in the summer, traditionally the only time that the Midewiwin was performed. Warren states, “This created yearly a national gathering and the bonds which united one member to another” (100).

There are many variations involving both the creation of humans and the Midewiwin for the Ojibwa, some included their important animals. Dozens of Manitou took animal forms. The bear and animals living in water were most closely associated with the Midewiwin. Ojibwa believe that the Manitou took animal form and gave rise to the great respect hunters accorded animals. According to the Ojibwa, the Midewiwin came into existence when the servant Mi’nabo’zho (a great rabbit) of the Good Spirit saw the helpless condition of the Ojibwa and wanted to give them the means to protect themselves from hunger and disease. He chose to communicate with the people through an Otter, which subsequently became a sacred spirit of the Midewiwin. An otter pelt was often used as a medicine bag, which contained the sacred curing items used in ritual. The Great Rabbit gave the Otter the sacred drum, rattle, and tobacco to be used in curing the sick. Through song, he related the wish of the Good Spirit, that the Ojibwa be spared from hunger and have long and comfortable lives. The Great Rabbit conferred upon the Otter the secrets and mysteries of the Midewiwin, and with his medicine bag “shot” the sacred migiis shell into the body of the Otter. The Migiis was a white shell that was sacred to the Midewiwin, and the Otter, having been shot at with it gained immortality and the ability to pass on the secrets of the Midewiwin to the Ojibwa. Landes states “among the Manitos the mighty ones, like the great birds and beasts, were solitary Characters who met in smoke-filled councils

to discuss cosmic affairs. Such a meeting produced the first Midewiwin “(24).

Since religion pervaded every part of the life of the Ojibwa, the creation of man was just as important, and also a vital part of the Midewiwin. All Ojibwa knew some origin tales but the Midewiwin kept some veiled in secrecy. Though creation stories were familiar to all, they contained many variants, depending on what Mide was telling the story. There was believed to be a sanction against laypeople telling the stories, since “as man’s creation was involved with his death, it tempted Fate to discuss these idly. Man’s creation led to Midewiwin; the death-telling belonged to the Ghost rites” (Landes 89). Landes tells a multitude of versions on the creation of man, told to her by Ojibwas themselves. Though there are disparities between the tales, one version that is short and succinct, sums up most of the main points. An informant named Ponemah narrated this tale to Landes:

After God created the universe, he picked up dirt and made the first Indian. He picked up more dirt in the other hand and made a woman. Therefore, he made two humans [Indians]. From these two, the people multiplied. The man was given a bow and arrow to kill game for a living. That was the only thing God gave the Indian with which to make a living (94).

Now, most of their stories are much more involved than this particular one. Some have woman being created first, and some delve into the explanation of both fingernails and the color of their skin. The differences appear as slight embellishments on the tale, most likely from years of oral recitation. There was also no rigid limit to such elaborations. All the tales need to be taken with a grain of salt since most of these stories were narrated to Anglican people. Ethnocentrism and other issues might have clouded any early accounts of the origin tales, like it has affected most ‘non-Indians’ views today.

There are four classes of Ojibwa shamans. There are those who cure by singing and accompanying themselves with a rattle. These are equipped with a set of small bones, which they swallow and spit out as part of their procedure. They also administer medicines. The members of the second group perform magical feats, and usually are suspected of witchcraft. The third class of shamans is able to prophesy through the use of the conjuring booth. Lastly, there are the members of the Midewiwin who acquire divinatory powers and are able to employ magical means of procuring game. They also were able to ensure a safe passage to the spirit world. The shaman was central to the Midewiwin, and guarded their secrets fiercely. Mide shamans ritually orated to the others the origin tale and possessed immense prestige among the Ojibwa, along with the important curing of the sick. Mide shamans, who were most often male, frequently referred to themselves as Manitos, individually and collectively. Experienced shamans, creating a continuity of tradition, methods, and culture, initiated traditional shamans. Landes states that shamans “were the ablest and richest Ojibwa” and described them as “energetic, intellectually keen, and sophisticated” (16). Shamans were recognized as possessing extraordinary individual spiritual power. The shaman nearly always was the most feared and respected individual in the community for he had the power to produce both good and evil, with the oldest shaman being thought to be most evil.

A major crux of Ojibwa life was centered on ceremony, especially that of the Midewiwin. One of the major religious ceremonies was the Medicine Dance, and was held only once or twice a year and had a curative function. Only initiated members could take part in this dance, and application for membership could have been the result of sickness of oneself or relatives. Landes

states, “a Midewiwin curing lasted through seven or eight daytime or nighttime sessions of closed rites, besides one final day devoted to a public ceremony” (72). During each of the subsequent days, their origin story was recited. During these rites, the declamations of narrative were often interrupted by song. A major part the curing ceremony involved removal of shells from the patient, or sick person. This is described by Landes as done by various methods where the “Mide initiates of all ranks began a dancing round of shooting migis shells into one another, to demonstrate their relative powers” (73). This continued for hours until the main Mide officer declared the ceremony over. These ceremonies took place in a central wigwam in their camp, designated as the Me-da-we-gun.

Midewiwin rituals were public performances performed by a group of Mide working together. Their curing ceremonies lasted two, three, or even four nights, and there were a few other days of gathering that made a possible total of seven or eight ritual days. Landes states that “the first night of a Mide curing was secret; its date was set by the patient and the principal shaman he solicited” (116). The patient presented the shaman with food and tobacco as part of his payment.

With the first payment taken care of, the shaman gathered his associates and listened to the patient’s problem. On this first night, the beginning of the origin tale was recited. The next night, usually more of the origin tale was revealed and songs were sung to the Manitos about the patient’s problem. Because the patient paid for this service, everything the shamans did in their lodge became his property.

The next evening of ritual the shaman announced that the next day the ceremony would take place in the Mide sweat lodge. The importance of this ritual to the Ojibwa is articulated by Landes; “sweating was a sovereign medicine of the Ojibwa, for moral and intellectual power” (117). Not only was the act of sweating in such a lodge an important ritual, so to was the building of it. The patient and some associates, directed by the shaman, began to build this lodge under particular specifications. It needed to be circular, large, with a framework that was “to be four feet tall, of eight arching sticks or stakes, each six to eight feet long when upright” (Landes 118). The steam was made much like the saunas of today; rocks were heated up and water was splashed on them. On the day of the sweat ritual, the shamans and his associates stood with the patient outside the lodge. The shaman, his associate, and the patient stood outside the lodge, the head shaman at the south, the others arranged on his left, replicating the course of the sun. Songs were sung, and the men entered the lodge, performing the correct rituals while doing so. After performing important ritual processes, the sweating actually began, lasting about twenty to thirty minutes. The purpose of this long and particular ritual was said to “baffle the Evil Monster... to orientate the lodge in terms of the cardinal points, to establish mystic unity of Mide officers and the guardian cardinal by having the officers sit at proper posts, to alert Supernaturals, to fortify Mide officers through ritual sweating, and thereby to benefit the patient” (Landes 124). After the ceremony, the patient was made to disassemble the lodge and carefully place the framework against a tree.

Once all ritual concerning the sweat ceremony took place, the patient invited the Mide to a feast at his home. Particular rituals even surrounded this event. After the meal was finished more of the origin tale was orated by the Mide. After the narration, the Mide sung a song or two, accompanied by the dance of the patient. After this exhausting day, the Supernaturals and the participants were thanked by the shaman and dismissed.

Early the next morning the “Mide chiefs directed the patient to send invitation stick to Bowman, Steersman, and the six ‘bystanding’ officer-Supernaturals, summoning them to a feast

for ten o'clock in the morning" (Landes 129). More fees paid by the patient were ritually doled out to the participating parties this day. Unlike the previous ceremonies, this was open to all the villagers. The actual partakers of the ceremony entered the lodge, and songs were sung with drums and rattles looking for mystic aid. The fees were then ritually accepted, and some more of the origin tale was elaborated on. After more singing and circling the lodge, the participants filed out.

As discussed earlier, the Ojibwa Mide had a shell shooting ceremony, and this was performed after the ritual distribution of the fees. Each shaman ritually "shot" the powerful migis shell into the patient. Landes affirms that shooting a shell into a person "injected a dose of vigor" (138). Each move the participants make in this ceremony was choreographed ahead of time. The shells were first placed on the patient's body, usually on the joints since they were considered vulnerable and entrances of life, and were coached to cry out in pain as they were placed. The patient was then "shot", "collapsing". Following the placement and shooting of the shells, the main shaman addressed the Supernaturals and thanked them for strengthening the patient's life.

Usually it would be about mid-afternoon when the shell ceremony wrapped up. The patient's family then prepared another feast to prepare for the erecting of the wigwam the next day, which was carried out by some ten or fifteen village women. These women then feasted in the preparatory wigwam or lodge. The next day the wigwam was constructed near the preparatory lodge. Next, the Mide would be paid again with tobacco and food in the preparatory lodge. The patient would then dance to the drum of the shaman in full ritual dress, including paints. The drum was passed around to the ritual participants while the patient danced, all in preparation for entering the ceremonial wigwam the next day.

The following morning the public rite was performed, where the patient and shaman walked concentrically around the lodge. "They continued walking south, rattling and singing in a full sunwise circuit to the west door where they stood in file, facing it. A dog had been laid there, alive if a puppy killed if full grown. He represented the Bear, the door's guardian" (Landes 145). After the shaman's pleas to the door guardians, the patient picked up the dog and walked to the Mide lodge. The Manitos were placated and allowed his passage because of the dog. By this time morning approached, and breakfast was eaten in the preparatory lodge. The dog was used again, to allow entrance to the sacred wigwam by the shaman's associates. Once inside more dancing and singing took place, and the ceremony commenced. If after the many songs, the dog was still alive "it was knocked on the forehead by the servitor and singed for cooking" (Landes 156). Then the shaman's assistants walked to the doors, which were placed according to the cardinal directions, and barked, sung, and shook his rattle. After this took place, the patient was once again ritually shot with a migis shell and collapsed. While barking again, the shamans assisted the patient to a sitting, then standing position. When the patient finally stood and the shell was out, he was healed and strong again. More singing praising the various Manitos was done, along with dancing, and rattling. The shamans then took their seats, with the standing patient in the center. The patient then paid the shaman and his associates with blankets, and then sat down in the circle. More barking and singing ensued, and the patient was shot once again with the shell, this time claiming it only hurt for a minute, and he was now strengthened because of it. After this performance, that was choreographed earlier, the bystanders outside of the lodge were invited in. The patient was now considered a Mide, and the shamans ritually "shot" the newly entered guests. "This ritual shooting lasted hours" states Landes, and was "a kind of orgy of fun" (163). After all this excitement, a resting period took

place. At this time, the tobacco and boiled dog were brought in. The head shaman then saw that all the Mide people got a portion of the sacrificed dog. “The dog’s head remained in a pail and was reserved for the four men present who had undergone the rite four times; failing such adepts, it was offered to those present who had undergone the rite oftenest. When the dog slices had been distributed, the chief summoned the men to be honored with the animal’s head, calling them by name to eat of the symbolic Bear” (Landes165). Thanks to the Manitos were once again given and the ritual came to a close.

After the ending of the public rite, which was the highlight of the entire ritual process, more rituals did take place. The patient and his family once again hosted another feast in his lodge for the chief shaman and his associates. They then moved on to the sweat lodge for another ritual, and repeated the process the following two nights. At the final evening the patient was given migis shells. On the next morning, the patient disassembled the preparatory lodge. “On the succeeding day, the patient received formal invitations, or a collective one, from the lesser officers to join their feast” (Landes 171). The main shaman also invited him to a feast at this point. On the eighth day, the patient prepared birch bark for the sacred scrolls. Pictographs were then drawn on the birch bark by a shaman, who then taught the patient how to do it. The patient then bundled his scrolls and stored them for safekeeping. This concluded the patient’s initiation and curing.

One needs to understand the importance of rituals in the Ojibwa society to fully comprehend their culture. One also needs to get over the gut-reaction that happens when one hears sacrifice. Animal sacrifices, dogs in particular, were crucial to the functioning of the Midewiwin and the Ojibwa. Religion permeated every aspect of their lives. They had no conception of the separation of religion from the rest of their lives. Their religion and ceremonies allowed a union of all Ojibwa tribes, in all areas, and the rites of the Midewiwin were central to this unionization of the tribes.

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Indexicals and Demonstratives

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David Kaplan proposed a theory about ‘indexicals’ which has received wide attention in the philosophical community. David Braun found some problems with Kaplan’s theory and proposed a theory which solves these problems. However, as I hope to show in this paper, Braun’s problems with Kaplan’s theory are merely the result of confusing the terminology and his theory adds unnecessary complexity to Kaplan’s theory.

In Kaplan’s theory, indexicals are words whose meanings depend on the context of use. Pure indexicals and true demonstratives are two subcategories of the main category ‘indexical’. His theory is based on two principles:

Principle 1: The referent of a pure indexical depends on the context, and the referent of a demonstrative depends on the associated demonstration.

Principle 2: Indexicals, pure and demonstrative alike, are directly referential (Almog, 492).

The pure indexicals are ‘I’, ‘now’, ‘here’, ‘tomorrow’, etc. ‘I’ refers to the person who is speaking or writing; ‘now’ refers to the time at which the person is speaking or writing; ‘here’ refers to the place at which the person is speaking or writing; ‘tomorrow’ refers to the day after the day on which the person is speaking or writing. These words do not require any other special demonstration to be comprehensible, as the content is already obvious from the context.

The true demonstratives, on the other hand, do require something else. They are words such as ‘this’, ‘he’, ‘she’, ‘there’, ‘then’, and ‘that’. These are words which require some sort of demonstration, some indication of the speaker’s intention, in order to be comprehensible. For instance, if I were to say ‘That is mostly blue’, without any indication of what ‘that’ refers to, then this sentence is defective in some way: it has failed to refer. I would have to say ‘that pencil sitting on my desk is mostly blue’, or ‘That [pointing at the pencil sitting on my desk] is mostly blue’ in order to complete the sentence.

An indexical, whether pure indexical or true demonstrative, has several types of meanings. The linguistic meaning is the meaning the word has independently of any context. This is the meaning one would find in the dictionary. The character is set by the linguistic meaning and, in turn, sets the content in any given context for the word. The content of the word or expression is what has been said. The content must be evaluated in a circumstance, which will give a result, either a truth-condition for a proposition, or an object for a singular term.

Thus, the term ‘I’ has the linguistic meaning ‘the person speaking or writing’ (Webster, 898), which sets the character as referring to the person speaking or writing, which in turn sets the content in any given context, which will be evaluated in a circumstance of evaluation to give a result. Similarly for ‘that’: the term has the linguistic meaning ‘the person or thing mentioned or understood’ (Webster, 1890), which sets the character as referring to the person or thing mentioned or understood, which in turn sets the content in any context, which will be evaluated in a circumstance of evaluation to give a result.

Braun says that “Kaplan often identifies the linguistic meaning of an expression with its character” (147). This causes problems for Braun because he is confusing the meaning of the

two words, ‘character’ and ‘content’ within Kaplan’s theory. He is saying that, because the character just *is* the linguistic meaning, an utterance of ‘that is bigger than that’ would be meaningless because the content of both ‘that’s’ would be the same.

In Kaplan’s theory, the character of a word or expression is set by the linguistic convention, but it is not the linguistic meaning, as explained above. But, even if the character and the linguistic meaning were synonymous, this would not cause the problem Braun seems to be concerned with because the content of the word ‘that’ in its two incarnations in this example is different. Two separate demonstrations are associated with that one sentence, so there are two contexts and consequently two contents. This is confirmed by Kaplan himself, when he says, ‘A complete sentence (type) will include an associated demonstration (type) for each of its demonstrations’ (Almog, 527). Therefore, Kaplan includes the demonstrations in the context, which helps to set the content for any given utterance of ‘that’. The demonstration is part of the context of the phrase or word. Without the demonstration, any utterance of the word is incomplete.

Braun says that ‘Kaplan’s theory of true demonstratives makes use of a *formal language* that has an infinite supply of *that*’s distinguished by subscript: *that*₁, *that*₂, *that*₃ . . .’ (148). His point seems to be that the various ‘that’s’ with subscripts each have a different character, and so can mean different things. So, in a sentence ‘*that*₁ is bigger than *that*₂’, *that*₁ will mean one thing and *that*₂ will mean something else. But the subscripts in this sentence are only intended to stand in for demonstrations, because it is difficult to point from the page.

Braun is really confusing ‘character’ with ‘content’ here:

...the English word by itself cannot have a content (or referent) in a context; it must be associated with a demonstration in order to have a content. Therefore the *word* ‘that’, *by itself*, does *not* have a character; only “combinations” of the word ‘that’ with demonstrations do (149).

The fact that a word has different meanings in different contexts does not say anything about the *character* of that word. It is the *content* he is talking about, here. The content does not set the character--it is the other way around. The *character* of a word sets the *content* given a certain *context*. If we revise this passage in order to reflect this, it would be:

...the English word by itself cannot have a content (or referent) in a context; it must be associated with a demonstration in order to have a content. Therefore the *word* ‘that’, *by itself*, does *not* have a content; only “combinations” of the word ‘that’ with demonstrations do’

And, this is fine. Obviously, only combinations of the word ‘that’ and demonstrations have a content. That is, after all, one of the points of Kaplan’s theory.

Braun offers two ways to solve the perceived problem with Kaplan’s theory: The Context Shifting Theory; and The Three Meaning Theory. I will take each of these in turn.

The first theory is the Context Shifting Theory. In this theory, ‘the content (in a context) of a sentence containing several occurrences of a demonstrative may be determined by *more than one context*’ (153) so that a sentence which contains more than one demonstrative--even if those demonstratives are the same word--would have more than one context. The context would shift with the demonstrations, allowing the content of each separate demonstrative to be different.

However, on Kaplan's theory, the content of a demonstrative is already determined within a context, which includes the demonstration. A single sentence may have more than one context if there is more than one demonstrative within it. Therefore, the Context Shifting Theory is merely a restatement of what Kaplan has said in *Dthat and Demonstratives*.

The second theory Braun proposes, and the one he favors, is the Three Meaning Theory. According to this theory, 1) demonstrations are an explicit part of the meaning of a demonstrative, and 2) the character of a demonstrative is different from its linguistic meaning. He gives us the following picture to explain:

$$\begin{aligned} &\text{linguistic meaning} + \text{demonstration} \Rightarrow \text{character} \\ &\text{character} + \text{context} \Rightarrow \text{content} \quad (157) \end{aligned}$$

Unfortunately, this places the demonstration in the wrong place. The demonstration should be part of the context, because it helps to set the content of a given expression. This theory is making the character of the expression do much of the work Kaplan ascribes to the content of that expression within a context.

A revised picture which shows the demonstration in its proper place would be:

$$\begin{aligned} &\text{linguistic meaning} \Rightarrow \text{character} \\ &\text{character} + \text{context (including demonstration)} \Rightarrow \text{content}. \end{aligned}$$

So that linguistic meaning sets the character, and character in a context sets the content. This is exactly what Kaplan has proposed in his theory on demonstratives.

Thus Braun's proposed theory is not an improvement over Kaplan's theory because he is merely saying that the demonstration is part of the meaning of the word. Kaplan has already said this. More than this, Braun has moved the demonstration so that it defines the character rather than the content of the word. I believe this is due to his confusing the two terms, *character* and *content*. The character of a word is set by the linguistic meaning, and the content is set by the character and the context. However, Braun seems to have the character being set by the content, and so thinks that identifying the character so closely to the linguistic meaning of a word would create defective sentences--or at least a defective understanding of sentences.

Braun's favored theory of indexicals, the Three Meaning Theory, therefore adds unnecessary complexity to Kaplan's, by identifying the demonstration with the character of the word. The other theory he proposes, the Context Shifting Theory, is merely a restatement of Kaplan's theory, and as such unnecessary. All of this comes from a confusion of the terminology which Kaplan uses in describing his theory of indexicals. When we disambiguate the terms used, Kaplan has the better theory.

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Descartes and the Non-Deceiving God

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Descartes, in Meditation IV of his *Meditations on First Philosophy*, attempts to reconcile his belief in a non-deceiving God with the fact of human error. He firmly believes that human error is not an indication of God's attempts to deceive us but, instead, is just an example of humankind's ability to misuse the gifts given to us by God. However, Pierre Gassendi's second objection to this argument, part of the fifth set of objections to *Meditations*, asserts that, if we can misuse such gifts, then the gifts themselves are flawed. Gassendi's objection to Descartes' assumption in Meditation IV poses a significant problem for Descartes, one that he fails to fully overcome in the *Meditations*.

By the end of Meditation III, Descartes has established that he exists as a mind, and that he knows the nature of that mind better than the nature of the material world. He also believes he has established the existence of an infinite, all-knowing, all-powerful, all-good, non-deceiving God. However, he recognizes an apparent problem regarding the non-deceiving nature of this God, and he spends most of Meditation IV trying to address it. He realizes that God has given him, along with his other faculties, the faculty of judgment. He also understands that when he uses the faculty of judgment, he often falls into error. This fact seems to contradict the concept of a non-deceiving God. If God does not want to show Descartes a false version of the world, why is it that the truth so often seems obscured, and Descartes so often falls into error?

Descartes examines the problem of human error by first considering the act of human judgment. He discovers that God gives us two different tools with which to make decisions. These are the separate faculties of the intellect and free will. The faculty of the intellect is limited and finite, and allows us to perceive or understand ideas and problems. Conversely, the faculty of free will is infinite and unlimited, and is the faculty with which we actually pass judgment in any way we choose. Because the scope of the free will is so much larger than the scope of the intellect, we often judge things we do not understand, and fall into error. However, we cannot blame God for these errors. The faculties He gives us are essentially perfect: The intellect, though understandably limited, works well for our needs and the will is limitless and infinite. It is when we misuse our will, when we apply it to things that we do not comprehend, that we make mistakes. If we did not apply the will to things that are outside the scope of the intellect, we could never be led into error. The error clearly lies in our misuse of the faculty, not in the faculties themselves, as given by God.¹

An objection to this argument is put forward by the 17th century philosopher, Pierre Gassendi. Gassendi rejects the idea that the faculties of the intellect and free will are perfect, and that error occurs only when we misuse them. He claims that the mere fact that we are able to misuse them makes the faculties imperfect, because it makes error possible. A perfect faculty, given by a non-deceiving God, would be one which, when used, would make the truth perfectly clear and error impossible. He argues that, if God is all-knowing, he could have foreseen the error that would arise out of the use of these imperfect faculties. Further, he argues that if God is all-powerful and all-good or non-deceiving, he could, and would have wished to, correct the possibility of error by giving us more perfect faculties. For Gassendi, the fact that God did not

¹ Descartes' argument from *Meditations*, pp. 37-43

do so makes Him responsible for our errors.²

In Meditation IV, Descartes foresees this objection, and tries to defend his argument against it. He admits that God, given the vastness of his power and knowledge, could have made it so that he could not fall into error. He even puts forward a few examples of how God might accomplish this without taking away his freedom: God could have equipped Descartes with all the knowledge required for him to correctly make all the decisions he will need to make in his lifetime. This would not require that Descartes be given unlimited intellect on par with God's, but merely that he be given specifically the knowledge he would need to avoid error in his life. Another option, Descartes says, is for God to give him a "clear and distinct" understanding that it would be wrong for him to pass judgment on what he does not understand. Again, this does not require that God limit his freedom or give him unlimited intellect, just that he give Descartes the ability to know the importance of the one rule which could keep him from error.

In many ways, Descartes' understanding of this dilemma is almost as clear as Gassendi's. He doesn't think it hurts his argument for a non-deceiving God, however, and he defends his argument simply by claiming that we are unable to understand the nature of God's work. Although it may seem that we make mistakes in judgment, and that God remains indifferent to these flaws in reasoning, it may be that these smaller errors are a necessary part of God's larger perfection. As Descartes says, "I cannot therefore deny that there may in some way be more perfection in the universe as a whole because some of its parts are not immune from error..."³

Although Gassendi does not respond to this defense, I think he would have seen at least one flaw in Descartes' reasoning: If we don't fully understand God's nature, but we can be absolutely sure that he is all-powerful, all-knowing, all-good, and non-deceiving, then we are forced to accept the idea that God could have foreseen all human mistakes and that, in fact, that those mistakes *must* have been made in order to to maintain the perfection of the universe. If this is true, what we must have thought were "clear and distinct" ideas about the nature of good and evil are simply wrong. For example, according to this theory, if a man beats his wife for fun or tortures babies as an after-work hobby, God must have allowed it because it fit into some larger plan for perfection. Isn't this man, then, simply carrying out God's will? If we are to understand that God is all-good, and that all such mistakes in judgment are "God's will", then it seems we would be unable to label the product of that will "evil" or morally wrong. If this theory is true, then it seems that there are many cases in which God would have given us just enough information to view an act as evil, when it was actually good. This seems absurd, but more importantly, it directly contradicts Descartes' idea that God is not a deceiver.

Descartes does have another way to defend his idea that human error does not make God a deceiver. He claims that, although God may have intentionally made human error possible in order to fit some larger perfection, we are still responsible for each error made because we are given the opportunity to refrain from using our will to pass judgment on what we don't understand. In Meditation IV, he shows that, if we refrained from using our will in that way, we would never fall into error. Because we have that option, and therefore the ability not to error, the responsibility for mistakes we do make falls on us and not on God.⁴

² Objection from *Meditations* selected objections p. 90

³ Quote from *Meditations* p.43,

Descartes' argument from *Meditations* P. 42-43

⁴Descartes' argument from *Meditations* P. 43

This is a weak defense. In fact, Gassendi devotes little time to his objections against it, but is still able to successfully challenge it. He argues that this defense does not directly address the objection that God could have made our faculties more perfect so that we could avoid error completely. Even though we are given the ability to avoid error by remembering not to apply our will to matters that are beyond our intellect, error is still *possible*, and therefore our faculties could still be more perfect. Therefore, since God could have eradicated the possibility of any error, but didn't, he is responsible for those errors that occur.⁵

In addition to Gassendi's objection to this defense, I would argue that it might not be possible to avoid making judgments regarding things that the intellect does not understand. In fact, Descartes own assertion that we might not understand the nature of God's larger work implies that we might not fully understand the consequences of any of our actions. For example, I must decide whether or not to leave the house today. I cannot choose not to decide, I must either stay or go. I'm entirely unaware of the possible consequences of that decision. Perhaps if I leave, I will be in a car accident and suffer horrible injuries. Conversely, If I stay, perhaps I'll be the unsuspecting victim of carbon monoxide poisoning or I'll fall in the shower and hurt myself. In this case, as in many others, my intellect cannot fully comprehend the consequences but I am forced to use my will to make a decision.

Many of the other arguments in Descartes' *Meditations* rest on the truth of the argument stated here. Without a non-deceiving God, Descartes is unable to prove the existence of the material world and, more importantly, the truth of his reason. However, despite Descartes' efforts, Pierre Gassendi's objections are more than adequate to undermine his argument for a non-deceiving God.

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⁵ From *Meditations*, selected objections p. 90

Duty and Destiny in Shiva's Fire by Suzanne Fisher Staples

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Shiva, the Hindu God, is known for his power of destruction and renewal of the world. He is also known to rejoice by dancing and when he is angry, he destroys the world through a very ferocious kind of dance called the Rudhra Thaandavam or dance of anger. Indians have adopted this mythical dance called Bharatha Naatyam, to express various feelings. In Hinduism, Parvati is a goddess and also the wife of Shiva. Shiva is considered the Man and Parvati, the Woman in heaven. It is said in Indian myths that Shiva puts Parvati through a series of tests and experiments before she could be a good wife, to show the world what a woman is and what she is expected to do as a woman in the real world. In this novel, Shiva's Fire, Suzanne Fisher Staples tells the story of a village girl whose life is changed by the Dancing Shiva. Parvati, the heroine of the novel, is a traditional Indian girl who sees the power of destruction when she is born and the power of renewal when she grows to be a world famous dancer. Like the goddess Parvati, the main character in the novel also undergoes a lot of training before she becomes a woman. This paper explores the plight of women in India and the sacrifices they must make to ensure a better life for their families. It also shows that Destiny can be an elusive notion that can be translated in different ways through the characters of Parvati and Nalini: the contrast of renewal through Parvati following her destiny and Nalini forging her own Destiny through free will.

Every country has its own sets of rules as to how a woman should behave and what she is expected to do. In India, Pakistan and in some of the Asian and Middle Eastern countries, women are treated like objects. They are always seen as the weaker sex by men and are often ostracized by their own. Shiva's Fire, is set in post independent India, around the year 1987. This is a period of social development and Feminism was at its peak. Even though the main cities in India were developing faster, remote villages like Anandapuram situated in south India did not see much of anything that went on in the major cities. In India, it is said that the true tradition and culture is preserved only in the villages. Often times, elders living in cities yearn to go back to their villages, because they consider the city life to be corrupt and sinful. But unfortunately, it is in villages that we see women being murdered because they talked back to their parents-in-law and husbands, or they have not paid their dowry yet. Some are even killed because they continuously bear female children. So being a woman in India is not an easy thing; they have to be perfect just to be alive. The life of a woman is like a land in lease for generations. When she is born, she has to be good to her parents, obedient to her brothers, and to her teachers. When she gets married, the same obedience is expected of her in her in-laws' house, by her husband and his family members. Thus a woman is judged by her ability to be submissive, dutiful, and is expected to sacrifice at all times. The novel, Shiva's Fire depicts these qualities of women in India.

Meenakshi, Parvati's mother is a typical example of how a woman should be. She is pregnant with Parvati and is expecting the child to arrive anytime that particular day. Normally a woman during her last days of pregnancy is advised to take rest, but not in Meenakshi's case. She "sat back from the fire where she was frying puri and brushed hair from her forehead [...]. Sundar (her husband) sat beside her, cleaning his teeth with a thin stick [...]" (8). No matter what, the men never help their wives. This is very typical of Indian men. The women are worked very hard in villages in contrast to cities. They are expected to work even more when they are

pregnant because of the poor medical resources in the village. If they did hard work, it is said that the body will be more supple and the birth canal will become more elastic to have a safe and easy delivery. For some it seems cruel to see a heavily pregnant woman drawing buckets of water from the well and milking the cow as all of this work needs a lot of bending and forcing. But this is their destiny, to feed the family no matter how sick or uncomfortable they are. The women are born to serve men and their children. During this time her husband, Sundar, is just sitting beside and watching her work saying, “it will be good to have a daughter to help with work” (10). The girl is not even born yet but her destiny is already decided that she will help people. This will be very true of Parvati, who will sacrifice her life to help her whole family.

Men are the breadwinners of the family. They make decisions in the family, go to work, and when they come back home, they expect dinner to be ready. They eat and they go to sleep. In the novel, Fisher Staples introduces a crow on the day of Parvati’s birth. The crow represents the stereotype of men. Men must have their work done, no matter how sick the women are. This crow is insensitive to Meenakshi’s pain and it asks to be fed. Despite Meenakshi’s protests that she does not have any seeds and that she has other things to worry about, the crow insists. He says, “what could be more important than a starving brother?”(13). This is an ever present chauvinist mentality that men’s needs must be met even during situations of life and death.

Women in India face sexist remarks not only from men but even from women themselves. In India, women are put down constantly by mothers, mothers-in-law, relatives and even neighbors who are women. The only reason a girl is born is to fulfill the parents’ dream of getting married to a good man. If she is married, she completes just one duty. If she fails to have kids, no matter what the reason, she is the one who carries the name of the barren woman. Furthermore, if she loses her husband, she is blamed for everything that is to come. That is the exact case for Meenakshi in the novel. When her husband Sundar dies because of the stampede, not a single soul thought of blaming the elephants. For, the elephants are a form of God, the lord Ganesha with an elephant head who is known to remove obstacles. The death of a family member on the day a baby is born is considered a bad omen, for which the babies are often blamed. If it happens to be a girl, like Parvati, the chances of her having a happy life are very slim. Because of this mishap, her own family members and their close friends shun both Parvati and Meenakshi. Meenakshi is not even allowed to rejoice at the birth of her beautiful daughter. “It was not normal, Auntie (the sister-in-law) thought, that a new widow should look so happy [...], more like a bride than a widow. It pained her that Meenakshi did not show more respect for her dead husband” (41). More than the love for the husband, a woman thinks of her plight after his death. They were never allowed to remarry and since in India, girls were married young, they remained widows until their last day. Until they die, they suffer ill treatment in the hands of the society. They are never invited to anyone’s marriage or any festival. Other women think that even looking at them before going out of the house brings bad luck. This is illustrated in the novel exactly as it happens in real life. “No one looked at Meenakshi [...], they turned away from her.[...] People stopped offering food and solace.[...] Not only did many avoid her but the women hid their faces and the faces of their babies when they could not help walking past the widow and her daughter” (42-43). The life of the new born changes forever with people acting strangely around her.

Bad luck for Meenakshi and Parvati does not end there. The village of Anadanagar is struck with a cyclone followed by disease which the new born, Parvati is blamed for. All these unfortunate events are tied to the fact that Parvati is not “an ordinary girl child” (27). When her Auntie’s two children die of the deadly disease she does not hesitate to blame the new born and

Meenakshi for that: “you breathed the air, you fed that—that child!—all there was to eat. You took the lives of my children” (44). A regrettable thing about Indian mentality is the lack of logic. In the novel, a baby boy is born to the Raja of Anandapuram on the same day Parvati was born. Though the Raja thinks that his son is to be blamed for the loss of lives during the disastrous storm, nobody outside of the royal family seems to think so. This is mainly because nobody would dare to accuse a male heir of the upper class of having “destructive powers” like Parvati, a peasant girl.

Sacrifice is synonymous to an Indian woman. It has a lot of levels to it. For some it is forced upon and for others it is a choice. Such was the case for Parvati. As her only dream is to “dance like the Lord Shiva” (73), the sacrifice that she was making was some sort of initiation for her dream to come true. But nothing comes without a price attached to it. Certainly, she knew that the price she was about to pay for her dream “will change [her family’s] life and hers enormously” (87). She was expected to leave her mother, the only soul that loved her and cared for her no matter what the rest of the world had to say about her being possessed and “different”. It was a tough choice for a little girl but she knows that if she didn’t go, their lives would never change. She reasons with her mother saying “you and Venkat and Venu will have plenty to eat, and you wont listen to Auntie’s scolding anymore. And you will have your own house again” (99). Girls know that they have to make sacrifices so that their family would have a better life, so Parvati makes it. It is not often that a girl sacrifices something for a dream. Parvati’s sacrifice starts when she leaves her family to be a “Devadasi”, servant of God by following the guru to learn dance in a Gurukulam. Gurukulam is a place almost like a nunnery where all girls have equal share of chores. They follow strict rules of silence, which is impossible for Parvati to live with. Even though from time to time thoughts about her family make her sad, the fact that her sacrifice gave them a better life makes her accept the destiny. She does not get anything in return except for a couple of letters from her brother describing how the money from her Gurukulam has changed their lives. One of her brothers gets married and continues the vicious cycle of chauvinism saying, “I am so happy that Amma will have another daughter to help her with running the house” (171). Little does he know that Parvati has to work harder to feed yet another mouth. Parvati accepts this graciously, for her destiny is to serve her family. Most of the times, sacrifice will be something against a woman’s will. Nalini, for example, a friend of Parvati’s, who is also at the Gurukulam to learn dance, however, was happy to make the sacrifice of leaving her home and family. She is also from a poor family where she was the third of four girls. She is the one who had the talent of dancing and so she is sent to the Gurukulam, for a fair sum of money. If Parvati’s mother was everything for her, Nalini’s mother was quite the opposite. Nalini says, “her mother was not well. When she was not actually ill, she invented a symptom to suffer. She complained and cried and expected her daughters to wait on her” (142).

Women in India are shaped by many external forces, though some argue that obedience is an innate quality. Every Indian girl is taught when she is young the most valuable lesson in her life is total devotion and obedience in this order: the Mother (maatha), the Father (pitha) the teacher (Guru) and then finally to God (Deva). One who fails to obey the teacher will not attain redemption with God in heaven as they say in India. Thus every child grows with this thought and they are afraid of their teachers more than anybody. This devotion to the teachers is one of the best-kept cultures among Indian students in India. If it is such in schools, there is no doubt that a dance school like Gurukulam is even more rigorous with its students. They are submerged by rules that take over their lives. In gurukulam where Parvati studies dance, strict rules apply to everyday life. Even in schools girls are expected to be more obedient than boys. In the dance

school, every girl was expected to leave everything behind and do the only thing they were in for: Dance. But everybody does not feel the same way about devotion and obedience. Certainly Nalini does not. Even though they are bound to an unyielding routine and way of life, sometimes nature is more powerful than rules. When Nalini falls in love with a bandit, her dream of marrying him overtakes her dream of becoming a dancer. She says, "I love the music, and the dance, but I can't devote my body and soul to them." (144). It is not as important for Nalini as it is for Parvati. Nalini wants to marry the man saying that she is willing to take risks for what she wants. Her destiny is to follow her heart and go with the man she falls in love with. When Parvati falls in love with the prince back in her home town, she refuses to heed of her natural feelings and is even ready to sacrifice that wonderful, unprecedented feeling for the sake of her destiny: "Dance like Shiva" (269). For some, love is the magic of possibilities. Parvati realizes that now she has experienced the feeling of love for a man, her destiny feels like a "terrible burden" (247) for the first time in her life. But the moment she starts dancing, she hears the voice of Shiva himself saying "you are the magic of possibilities" (270), as if he wanted to put an end to his little games in heaven with his wife Parvati, as if he said this is what her destiny is and that she is born to fulfill her destiny by doing what is expected of her.

It is amazing when one thinks of the Indian women who were great leaders of the nation, fighting every step of the way for the country's freedom, to suffer such a fate in the hands of the society. This country where most of the deities are goddesses treats the real women in an unjust manner. This country, which has seen Kamala Nehru, a great freedom fighter, Sarojini Naidu, a famous feminist and the first woman Governor, Indira Gandhi, India's first Woman Prime Minister, still thinks that women are born to obey. India has got its freedom from the British in 1947 but the true freedom will come when the country's women are treated with the respect they deserve. The changes are rather slow but they are certain. True freedom of a country comes when it treats women and men equally. Women are expected to sacrifice their way of life to fulfill their duties. The plight of women in India is a disease in need of remedy. Women should be able to choose their destiny through free will like Parvati and Nalini did. Though Parvati was thought of having destructive powers, through her destiny she renews herself and the lives of her family members. Women should be able to choose a better destiny through equality, which will eventually ensure the true freedom for all of India.

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“The Trial”: Freedom, Liberty, and the Law

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Franz Kafka’s novel, *The Trial*, documents the saga of a bank official who finds himself under the scrutiny of what seems to be a bureaucratically-bound kangaroo court. Besides the “shady” nature of the court’s proceedings, the bank official, Josef K., never discovers why he is arrested, tried, and eventually sentenced to death. This being the main literary theme of the story, one may overlook a basic, yet no less important, issue; K does not know the law which governs him. The law of K.’s home, much like the attic-courtrooms he is presented with, seems to be hidden away from the public, sequestered from those who it is meant to govern. This, then, is at the core of *The Trial* and speaks directly toward the ideas of freedom, liberty, and the law.

What is freedom? Political scientists, philosophers, and historians have been searching for an adequate answer to this oft-confusing question for centuries. Historically, political theoretician John Locke was one of the first thinkers to “consider what State all Men are naturally in” (Locke 269). Locke’s State of Nature, simply stated in the *Second Treatise of Government*, is “Men living together according to reason, without a common superior on Earth” (Locke 19). This concept then, leads directly into the related idea of liberty.

For a usable definition of liberty, we also turn to John Locke. Even though, according to Locke, man in nature is “in a *State of Perfect Freedom*” this does not give him the absolute ability to do whatever, whenever, to whomever. Instead, the liberty of John Locke might be considered as an individual’s independence under obedience to the Law of Nature (Locke 269, 270-271). This governing Law, the restraint to Lockean freedom, is human reason:

“And Reason, which is that Law, teaches all Mankind, who will but consult it, that being all equal and independent, no one ought to harm another in his Life, Health, Liberty, or possessions” (Locke 271, Paragraph 6)

and

“The *Freedom* then of Man and Liberty of acting according to his own Will, is *grounded on* his having *Reason*, which is able to instruct him in that Law he is to govern himself by, and make him know how far he is left to the freedom of his own will” (Locke 309, Paragraph 63).

Although the law in Locke’s case is “human reason,” the concepts of freedom, liberty and the law [natural or artificial] are inextricably connected to each other.

It is believed, assumed really, by Josef K., and his fellow citizens, that their freedom is also contingent upon the laws of their country, that is to say, their liberty and their rights are secure under the law. Upon his arrest, K. immediately demands information regarding his situation, asking the warders, “What are you after?” (Kafka 9). Franz the Warder responds:

“We are humble subordinates who can scarcely find our way through a legal document...Our officials...as the Law decrees, are drawn toward the guilty and must then send out us warders. That is the Law” (Kafka 10).

K. responds by admitting his ignorance to this law. Much like today, ignorance of a set of rules neither makes an individual exempt from following them, nor is it a good defense when one has broken them. Franz remarks to:

“...[to K.]...All the worse for you...[to other Warder]...See, Willem, he admits that he doesn't know the law and yet he claims he's innocent” (Kafka 10).

By the time Josef finally arrives at his mid-morning interview with the Inspector, he blindly accepts “the Law” as being the ultimate arbiter and then sets out to find how he had breeched it:

“I argue this from the fact that though I am accused of something, I cannot recall the slightest offense that might be charged against me. But that even is of minor importance, the real question is, who accuses me? What authority is conducting these proceedings? (Kafka 16) [emphasis added].

Here, Josef K. is stonewalled for the first time. The Inspector conducting the “initial inquiry” introduces K. to the bureaucracy-bound court system. It is not our duty, he says, to know what you have been charged with or what you have done.

The next time “the Law” is highlighted follows Josef's first appearance at the tenement-attic courtroom. Josef, with the help of the friendly washerwoman, gains access to the place of his “public” examination. On the table of the Examining Magistrate, are the “law books”, or at least they are assumed to be:

“They were old dog-eared volumes, the cover of one was almost completely split down the middle, the two halves were held together by mere threads. ‘How dirty everything is here!’ said K., shaking his head...He opened the first of them and found an indecent picture...K. did not look at any of the other pages, but merely glanced at the title page of the second book, it was a novel entitled: *How Grete Was Played by Her Husband Hans*. ‘These are the law books that are studied here,’ said K. ‘These are the men who are supposed to sit in judgment on me?’ (Kafka 64, 65).

Whether the pornographic materials were meant to be a “substitute” for civil law (a commentary on base human nature and the perceived conditions which accompany that status) or an attempt to exemplify the absence of actual civil law, remains in dispute. The fact those sitting in judgment over Josef K. had no written law seems to indicate an avowal of the purely subjective nature of a government's institutions which no longer seek to protect its people, but only wishes to perpetuate the control of the state and work in its own interest.

The most extensively discussed instance of “the Law” occurs in Chapter 9, “The Cathedral.” Josef K. is ordered by the Bank Manager to show an important bank client around the city. Oddly enough, the Italian agrees to meet K. in the city's cathedral. Once there, K. finds himself quite alone with the Parish Priest, who also is the Prison Chaplain. While here, the Priest tells Josef the parable of the Doorkeeper and the Visitor.

After being rebuffed by the Doorkeeper, the Visitor, who had come to seek the law, spends his life waiting and attempting to pass through a door to attain “the Law.” Upon the Visitor's deathbed, the Doorkeeper tells his dying acquaintance:

“No one but you could gain admittance through this door, since this door was

intended for you. I am now going to shut it” (Kafka 269).

Although the Doorkeeper’s role in this story adequately follows the bureaucratic roles of the Warders, Inspector, and the Examining Magistrate, the tale harbors a deeper message about the Law.

Immediately, Josef realizes the Doorkeeper deceived the visitor (Kafka 269). The Priest – who, coincidentally, is the Prison Chaplain – proceeds to convince Josef otherwise:

“ ‘Don’t be too hasty,’ said the priest, ‘ don’t take over someone else’s opinion without testing it. I have told you the story in the very words of the scriptures. There’s no mention of deception in it’” (Kafka 269).

In the end, however, the cleric reneges on his arguments and confirms his parishioner’s original stance on the parable; the visitor was deceived by the doorkeeper (Kafka 275). This deception on the part of the priest only further verifies that he is, in fact, the “Doorkeeper”, Josef is the “Visitor”, and Josef’s life and eventual death is the parable.

The Priest is a welcoming and trustworthy figure since he is of the “church”. This use of “religion”, more specifically, the power of the Triune God, only deceives Josef, much the same way the Doorkeeper fools the visitor “...keepers stand ready at every door, one more powerful than the other. And the sight of the **third** man is already more than I can stand” (Kafka 267, 268) [emphasis added]. The Priest, in this capacity, is not only of the church, but his role as Prison Chaplain makes him an agent of the court:

“ ‘You must first see who I am,’ said the priest. ‘You are the prison chaplain,’ said K... ‘That means I belong to the Court,’ said the priest” (Kafka 278).

In essence, the corrupt state uses the inherent power of the “church” to further control the hearts, minds, and behavior of its people, thus extending and preserving the seemingly limitless power of the state. This is evidenced in the role of the priest. Not only does the priest “belong to the Court,” he is the embodiment of the Court, dismissing K. when their “discussion” was over:

“ ‘Don’t you want anything more from me?’ asked K. ‘No’, said the Priest... ‘I belong to the Court,’ said the priest. ‘So why should I want anything from you? The Court wants nothing from you. It receives you when you come and it dismisses you when you go’” (Kafka 278).

Perhaps what Kafka is trying to convey, via the parable and the discourse between Josef and the Priest, is that the conflict between Natural Law (conscience) and “man-made” civil law is so overwhelming it creates a confusion which results in ignorance of the “true” law. This internal chaos, on the part of the individual, may then be exploited by a corrupt government for its own ends.

In talking about the law, liberty, and freedom, this author is reminded of a portion of text from Jerry Pournelle’s politically themed science fiction epic, *The Prince*. One of the leading characters is speaking to the title character, Prince Lysander Collins, grilling him on the basics of political science. “Would you like to know the most significant event in the history of Freedom?” the Prince’s teacher, John Christian Falkenberg III, asks. “...[W]hen,” Falkenberg continues, “the Roman Plebeians required the Patricians to write down the twelve tables of the law and put them where everyone could see them – and thereby proclaimed the law supreme

over the politicians. The rule of law is the essence of freedom” (Pournelle 471). One may definitely note how freedom under the law, or liberty, has come to permeate the very concepts of thought, that the entire concept of individual liberty depends on the public access of the laws which, theoretically, are to apply to everyone. Josef K.’s plight echoes that of the Roman Plebeians in their quest for freedom and equality under the law. The laws set down by a state-government are designed, not only to protect citizens from each other, but to protect citizens from the state. When laws are passed and clandestinely kept, the government can revoke liberty -- freedom under the law -- and plunge its people into the politically uncertain and potentially hostile world of Josef K.

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Reinforcement Theory: Studies of Behavioral Change

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Abstract

34 college students participated in individual studies assessing the effectiveness of Reinforcement Theory as a technique to change personal behaviors over time. An Analysis of Variance (ANOVA) model was used to determine whether these behaviors had changed over the four-week experiment period and whether grades and gender affected success. Suggestions for future research within a Reinforcement Theory framework concluded the study.

Background

The original meaning of the term reinforce is ‘to strengthen.’ In the behavioral sciences it refers to a stimulus that strengthens or increases the probability of a specific response or behavior (Schermerhorn, Hunt, & Osborn 132). Reinforcement theory revolves around reinforcement contingencies and the reinforcement schedules to which they are applied. There are four types of reinforcement contingencies. Positive reinforcement is the administration of a reward after a desired behavior. Negative reinforcement entails the avoidance of a negative consequence. Punishment is the administration of a negative consequence following an undesired behavior, whereas extinction is the refusal to give positive reinforcement following undesired behaviors (Harris & Kleiner 2).

The timing of reinforcement plays a critical role in initiating and maintaining performance levels (Barker 69). There are four different schedules of reinforcement: (1) Fixed interval schedules reinforce behavior after a specific amount of time, such as a paycheck every week, (2) Variable interval schedules reinforce a behavior after an inconsistent period of time, for instance pop quizzes, (3) Fixed ratio schedules reinforce after a precise number of responses, for example, receiving a bonus after selling five bottles of wine, (4) Variable ratio schedules reinforce a behavior after an unknown number of responses, i.e., a slot machine (Schermerhorn et al. 132-133).

Reinforcement theory is a proven and valid method for changing behaviors. Numerous studies have validated its effectiveness in work, sports, and educational settings. As examples, Harris & Kleiner have documented the successful application of Reinforcement Theory in America’s best managed companies (1). The application of Reinforcement theory in athletics includes the requirement that clearly defined behaviors, such as timeliness, respect, diligence, and collaboration, must be established in order for player to reach their full potential (Barker 68).

Educational practice has benefited greatly from the application of these techniques. Teachers use the theory to encourage productive behavior in the classroom. Smiling, verbal approval, and tangible rewards have effectively created desired effects for teachers (Blanford 10). Another study conducted by Slaven & Totterdell found that the desire to attend the course, as well as high work motivation, increased the number of time-management skills students

practiced when they returned to work (26). In the same study, work environment factors, specifically supervisor and colleague reinforcement and support, were shown to facilitate the transfer of skills to students' jobs (26).

Reinforcement theory is not a universal method. The effectiveness of reinforcement theory is limited by individual and environmental factors. Slaven & Totterdell have proposed that incentive systems based on reinforcement may have damaging effects (26). The argument is that reinforcement may decrease an individual's intrinsic motivation to engage in a particular activity. For example, if a child who enjoys drawing pictures is externally reinforced (with points or money) for drawing, the child may exhibit the behavior less frequently when the reward is withdrawn. Matthews explains that individuals may feel manipulated when offered rewards designed to control their behavior (H.01). If a person does not desire to change a behavior, accepting a reward for that purpose may create an unwanted obligation. People cannot outperform their abilities. No amount of motivation will change a mediocre player into a sport star (Matthews H.01).

Despite criticisms of reinforcement theory, it is a practical tool that has proven its success in every field of life. The purpose of this study is to investigate the success of reinforcement theory among college students attempting to change personal behaviors. This study seeks to assess whether grade in course, without the experiment assignment included, and gender of the subjects predicted successful application of reinforcement theory. We hypothesized that students who do better academically might be more likely to apply reinforcement theory successfully. We chose gender as an exploratory variable that might make a difference in Reinforcement Theory success.

Method

Subjects

34 College students participated in a motivation experiments directed at changing personal behaviors.

Procedure

Each individual chose a behavior to change over a four-week period using reinforcement theory. The two authors' experiments are described below as examples of these projects.

Experiment I

Subject:

The subject was a twenty year old, female college student.

Procedure:

The subject chose a goal of studying 10 hours per week. A baseline week was included.

Reward:

Successful attainment of the goal resulted in going to a theatre and watching a movie.

Measures:

The behavior was measured by keeping a log of the amount of minutes studied each day.

Results

ANOVA indicated that there was significant difference in the amount of minutes studied across the weeks ($F = 8.819$; $p < .001$). Scheffe's indicated that the subject studied significantly more during week 1 in comparisons to all other weeks.

Experiment II

Subject:

The subject was a twenty year old, female college student.

Procedure:

The subject chose to exercise for 60 minutes a day, five days a week. No baseline week was applied.

Reward:

Successful attainment of the target resulted in a \$5 reward after each 60-minute interval. The subject applied the accumulation of money toward the purchase of a piece of jewelry.

Measures:

The behavior was measure by counting minutes of physical exercise including cardiovascular training, light weightlifting, and Pilates in a daily journal.

Results

ANOVA indicated that there were no significant differences in the amount of minutes exercised across the weeks.

Measures

Whether each experiment resulted in a success or failure, the subjects' gender, and the subjects' grades, without the experiment included, were recorded for the analyses.

Results

The ANOVA results for both grade and number of work hours indicated no significant differences.

Discussion

Our hypothesis that gender and grade in class would affect success was not validated by the data. It appears other factors are more important in determining success. For example, in Experiment I, the significant increase in study time occurred because the subject had exams during the first week of her experiment. For the remainder of the experiment, the reward was not strong enough to motivate the subject to study for at least 2 hours each day. Experiment II was not successful because the subject could not always adjust to the schedule of the experiment, and the reward was insufficient.

Reinforcement theory can be successful if the target behavior for change does not overwhelm one's ability, and if the reward is valuable to the subject. Future research generated by this study might focus on the individual's personal abilities and interests. It is a challenge to alter life-long behaviors; therefore the reward should be desired enough to overcome this factor.

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Molecular Dynamics Analysis and Simulation of bR and O States of Bacteriorhodopsin

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ABSTRACT

Bacteriorhodopsin is a protein found in the purple membrane of the bacteria *Halobacterium salinarum*. This protein has light absorption properties that generate multi stable states allowing the use of bR for new applications. The Chemistry at Harvard Macromolecular mechanics software package CHARMMTM is used to simulate the energy response of Bacteriorhodopsin at room temperature 300K, for the bR and the O states. The O state takes place after blue light ($\lambda \approx 635\text{nm}$) absorption. The total energy difference is found to be an absorption of $|\Delta E| = 783.979 \text{ Kcal/mol}$ that may be assumed to cause the isomery change in the structure triggering the state change. Therefore, during the bR state the applied energy, when limited using monochromator light source, change the bR state to the O state. CHARMM simulation results are in agreement with analytical solutions and measurements assuming limitations on the setup. Further tests are needed to verify the energy response during other intermediates.

I. INTRODUCTION

One strong engineering tendency is the bioengineering that has gained force in the last decade supported by the great achievements in this filed. Due to the increase of the biotechnology influence, researches have found applications for biological structures as alternatives for current technologies. In this paper, the application of protein found in the purple membrane of the bacteria *Halobacterium salinarum* called Bacteriorhodopsin (see Fig. 1) is studied. This protein is a $\sim 26\text{kD}$ ($400\text{nm} \times 400\text{nm} \times 500\text{nm}$) composed by a sequence of 248 residues arranged in seven α -helices and one β -sheet [8][9][13]. It also contains a retinal chromophore linked through an Schiff base to Lysine 216. This chromophore gives to the protein photo active properties, that generates different isomerization states induced by light excitation of certain wavelengths being them state. These stables states can be read and recognized using light absorption properties of the protein which provides the possibility of creating a three-dimensional binary memory assigning the stable state to binary values. [8]

The protein Bacteriorhodopsin contains two different paths of isomerization reactions. The first path starts at the state called bR which is the most stable state of the protein. Blue light induction with a wavelength of approximately 635nm triggers the first chain reaction that causes the protein to change it isomery in six different states. From the bR the following states are K, L, M, N, and, O. If only blue light is applied after the O state the protein returns to the initial stable state bR. In order to reach the other stable named Q another light excitation is necessary during the O state. However, another wavelength is required for the reaction to occur. Red lightof wavelength around 690nm has to be induced before the reaction reaches the bR state. Fortunately, the reaction from the O state to bR is the slowest in the entire cycle which allows a more precise red light induction. Being induced at the right time the protein reaches the P state and then the second stable state Q. The previous process constituted of blue light followed by the red light induction is named writing. The erasing process happens when high intensity blue light

is applied to the molecule [8].

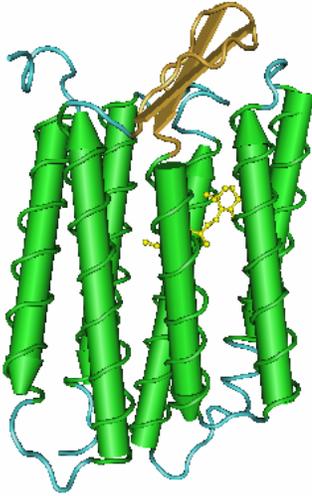
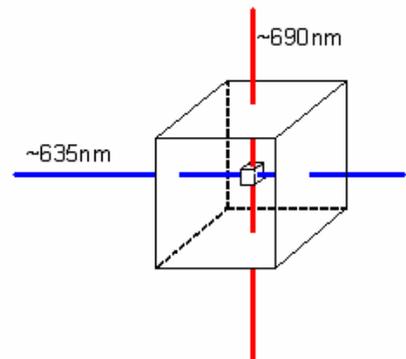


Fig. 1. Bacteriorhodopsin Molecule
(Picture generated with Cn3D 4.1
using 1AT9.pdb from [8])

The light induction on the molecule creates proton pump which had made Bacteriorhodopsin a target of intense study. As before mentioned, the retinal chromophore located in the G-helix is responsible for the isomery change. A strongly delocalized structure is formed in this bonding where a protonated Schiff base holds the residue to the chromophore. During the light excitation on the bR stable state the isomerization all-trans to 13-cis forces a proton transfer from the Schiff base to the negatively charged Asp85 located in the C-helix which is deformed due to the Coulombian attraction of the Asp 85 towards the nitrogen in retinal chromophore. This causes the F helix to bend as the retinal straightens towards it. This movement closes the residue APS 96 to the now deprotonated Schiff base which causes a proton transfer from the APS 96 to the Schiff base positively charging it again.

The last isomerization regenerates the bR state again finishing the photo cycle. The change to the P and Q states comes from the state located before the ground bR state is reached. When this state is photo induced an all-trans to 9-cis isomerization happens followed by a neutralization of the Schiff base resulting in the P stable state. This P state has a long life and only changes its structure back to bR state when the high intensity blue light excites the protein giving it energy enough to reprotonate the Schiff base [5] [7].

When crystal oriented for biocomputing experiments, the solvation is done by lipids which can also be induced by the externally applied light. This energy diffusion may stimulate molecules located close to the target molecule decreasing the size efficiency of the potential memory. In this paper the goal is to analyze the structure of Bacteriorhodopsin and its energy stimulation response in order to understand how much energy is lost from the target and spread to molecules around the target to optimize the memory capacity. The smaller quantity of molecules is stimulated in a volume generates a higher capacity memory (see Fig. 2).



**Fig. 2. Bit representation
inside a bR cuvette**

II. MODELING

The model was based on the PDB file 1AT9 that describes Bacteriorhodopsin in the bR state. This model was determined using Electron Diffraction at 3.00Å resolution [9]. As for most of the PDB files, the structure did not contain hydrogen atoms which were added using CHARMM (Chemistry at Harvard Molecular mechanics) using the HBUILD routine. CHARMM requires a description of the topology of each residue including information about the atoms as type, mass, partial charge, and spatial location [4]. Most amino acids are provided within CHARMM. However, the retinal chromophore had to be created. The path used was to modify the existent Lysine 216 and add the chromophore to it. The partial charges were found by analogy and the distances angles and improper were found using SPARTAN [11]. The combination of lysine/retinal was named as RET and added to the topology file.

The O state had a similar approach. However, a different set of coordinates was used from a different PDB file named 1JV7 determined using X-ray Diffraction at 2.25Å resolution [9].

III. MINIMIZATION

The MD simulation was run in CHARMM first to obtain the PSF file generated from the concatenation of the topology information and amino acids sequence. Having the PSF allows the energy minimization of the structure. The initial coordinates read from the PDB file works as bases for this analysis. CHARMM changes the initial coordinates to find the structure with minimum energy which is the most stable position for the atoms at a certain state. In order to accomplish that, two different algorithms were used, Steepest Descents (SD) and Conjugate Gradient (CONJ). Since the main goal was dynamics simulations a few hundred of SD followed by CONJ would relax bad contacts and prepare the model for the simulation.

IV. SIMULATION

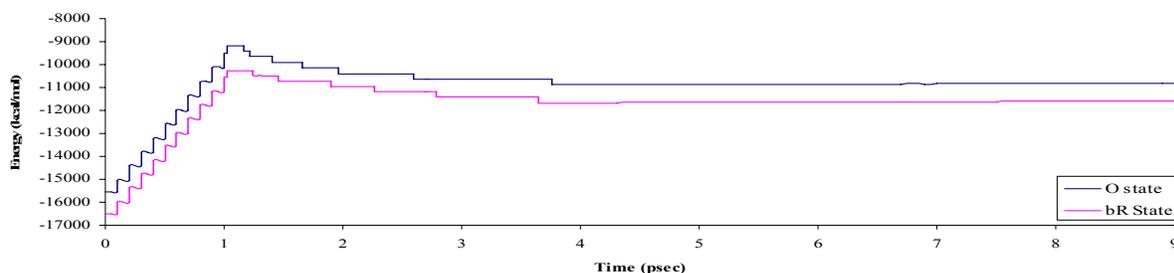


Fig. 3. CHARMM™ simulation of the total Energy for bR and O state transient response.

During equilibration, temperature was only allowed to vary in a range of between $\pm 10\text{K}$ for 3 ps and had the velocities reassigned every cycle in which temperature crossed the temperature range. Fig. 3 shows the total Energy simulation for bR and O state. The total difference is

$|\Delta E_{bR,O}| = 783.979 \text{ kcal/mol}$. Also from simulation, the Kinetic Energy displays a small difference between bR and O state $|\Delta KE_{bR,O}| = 52.23 \text{ kcal/mol}$ as shown in Fig.4 which makes the Potential Energy the largest factor in the total energy difference.

The added energy was calculated based on a similar setup to that used in [8], light from Tungsten Light 30W source was passed through the Acton Research Corp. SpectraPro® 150 Monochromator in pulses of 1000Hz. The output slit was set to an area of 1mm x 3mm and the wavelength varied from 400nm to 750nm which includes the wavelength in study ($\lambda = 635\text{nm}$). Since the Bacteriorhodopsin volume is 400nm x 400nm x 500nm, there are two different areas on the bR molecular surface that were considered. The analytically energies applied by the laser were extremely high due to the time $t = 1/(2 \times 1000\text{Hz}) = 0.5\text{ms}$ from [8]. However, from literature the isomeration reaction time varies and around 4 ps. Using this time the energy applied equals 498.47 kcal/mol and 748.08 kcal/mol for 400 x 500 nm and for 400 x 400 nm surfaces, respectively. Aiming the energy difference from the simulation the time t was obtained was equal to $t = 4.19 \text{ ps}$.

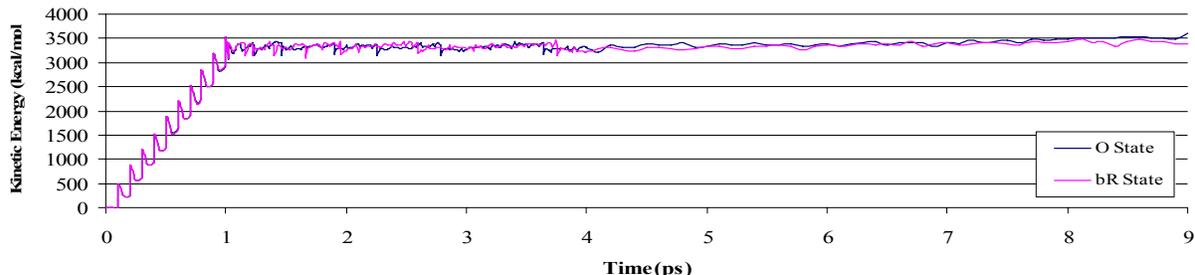


Fig. 4. CHARMM™ Kinetic Energy for bR and O state.

V. CONCLUSION

The reaction time $t = 4.19 \text{ ps}$ yielded an applied energy on the 400 x 400 nm molecular surface of 793.619 kcal/mol. This value agrees with the total energy difference from CHARMM simulations and with the time range found in literature. Deviances may occur between simulated and analytical values since there are intermediates between bR and O states. A study relating the energy of the entire cycle is required to understand the energy decay during the photocycle.

Based on these simulation results the energy is absorbed by the molecule and not dissipated to solvation considering time, power, slit aperture, and molecular surface. The energy added is enough to trigger the reaction on the bR state as seen in experimental results [8][15]. Additional reaction time would decrease efficiency by increasing energy input and decreasing memory capacity. Further studies must be done to complete these results regarding the energy response in all different states of the photocycle as how the surplus energy from the bR state modifies the structure on the following state which would allow a better energy tracking. The results presented in this study demonstrated that Bacteriorhodopsin is a promising candidate for biological computing.

ACKNOWLEDGMENT

The authors thank Dr. R. L. Ewing, WPAFB/IFTA; Dr. F. Schuermeyer, WPAFB/SND; and Mr. J. B. Moncrief, WPAFB/IFTA.

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The Thin Line Between Good and Evil: Gothic Power Plays in *Inés* by Elena Garro

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The fate of a virginal adolescent who moves to another country in order to work in the house of a shady male employer should inevitably arouse curiosity. After all, youth, innocence and old money echo gothic plots, which disclose the heroines as victims of their own naiveté as well as of other people's questionable doings. This is the case of *Inés*, a novel by Elena Garro, a famous Mexican author who passed away a couple of years ago.

The novel's protagonist, Inés, is a clear example of a gothic heroine. As an orphan she is raised in a Spanish convent until her cousin Jesús invites her to France to work with him as a servant in the house of Javier, a powerful and vicious tyrant. Since the novel is told in third person omniscient, it is only through the voice of the narrator that we are able to understand the personalities of each protagonist. We put our confidence in the omniscient narrator, who gives us small details about the history of Inés, both from her past and her present. According to Cynthia Duncan in her article "Mad Love: The Problematization of Gendered Identity and Desire in Women's Novels," the narrator "giv[es] us the impression that we are privy to [Inés's] thoughts and emotions" (40). The word "impression," is crucial because we really do not know anything about the true personality of the heroine—we only see Inés the same way that the other characters of the novel perceive her. Duncan says, "she is an object to be looked at and acted upon—nothing more" (40). Because Inés never asserts herself as a subject, even the narrator, who supposedly knows everything, cannot give the reader anything more than an impression of the personality of Inés.

Upon analyzing everything that the narrator does and does not say about Inés, it is clear that the heroine is as much a victim of the world as well as she is her own naivety. Because she had only lived in a convent before moving into Javier's house, Inés has had no experience with any of the dark aspects of life with which she is faced in her new job. For instance, as Javier's employee, she listens in on suspicious rituals being performed by Javier and his friends, cleans up after night-long orgies and unwittingly becomes a victim of drug abuse. Inés suffers in Javier's house because she is locked in it without her freedom. As a servant, she has to follow Javier's orders. She cannot even go to church—the only safe and familiar place for her — because Ivette, a member of the family and the person in charge of Inés's documents, will not return Inés's passport or her work permit in France. Since she is only faced with the dark aspects of life and has no control over her actions, Inés, according to Duncan, "cannot function as a subject in the text because she is defined only in terms of lack" (39). Although the narrator seems to be ambiguous and vague about the heroine's life, the narrator is not leaving out details but rather telling everything that there is to say about the protagonist. What we do know about Inés is that she is pure and kind, sheltered by her conventional upbringing, and each day more terrified of her employer and his shady cronies who scrutinize her every step. Busy sweeping away proof of previous night orgies, Inés slowly becomes the center of libertines' attention, transforming into the revert victim of demoralized Javier and his blood-thirsty cohorts. Her purity and strong faith are a challenge to Javier who cannot miss the opportunity to destroy

innocence. He is in charge of everything that happens in the mansion, including cult meetings, the abuse of Inés and eventually her abduction and her death.

Inés a victim and Javier her oppressor, and they respectively represent “the blamelessness of the pure victim and the sadistic villainy of the male victimizer” (Myers 89) that gothic works explore. However, what is the difference between victim and villain? The key element that distinguishes the victimizers from the victims is power; the villains have it and the victims do not. Inés is an example of a victim because she lacks power. Duncan considers Inés to be, “always the object of the actions, never the subject of them” (41). Inés does not control anything or anybody in her life, nor is she capable of warding off abuse from the experienced libertines. She is kidnapped, tortured, drugged and repeatedly raped though she never does anything to instigate such treatment. For Inés, power is impossible to obtain as long as she is a part of her employer’s world. Because Inés is an outsider in the house, she has no power, and as Duncan states, “her death and the erasure of her presence from the narrative becomes the only possibility for Inés to achieve any degree of autonomy” (40). In *Inés*, as in all gothic literature, death “stands for ultimate timelessness and a state without want” (Kadir 51). Inés therefore can only gain her independence by dying because it seems that her only function in life is to be the victim of Javier and his cronies.

Another gothic heroine in this novel is Irene, who is Javier’s daughter, and Inés’s only friend. Javier does not want to participate at all in Irene’s life, nor does he wish to participate in the life of Irene’s mother, Paula. In fact, prior to Inés’s arrival Javier throws both Irene and Paula out of his house and specifically instructs the servants to pretend that nobody is home should either woman attempt to return. The novel suggests a vicious cycle in the gothic world in which the women assume their natural role as a victim, and thus either Irene or Paula will be Javier’s next victim after Inés’s disappearance. Javier needs to be in control since he does not love anybody else but himself. He does not care for his wife, his daughter and especially his employees; on the contrary, for Javier women are only sexual objects whom he can control. As long as he has a victim he has power, Javier’s only obsession.

While in gothic works women generally take the role of victims, there are two women in this work who are obviously victimizers: Ivette and Gina, Javier’s current lover. Ivette recognizes on the day of Inés’s arrival that the girl’s intelligence is superior to that of a normal person, and her analysis skills are perfect. These skills make Ivette nervous, therefore she makes sure that Inés never leaves the house, nor that she even has a chance to receive and write letters to her only protector from Spain, her Mother Superior. Ivette is the opposite of Inés because although she is aware of everything that happens around her like Inés, Ivette has the power to change the things that take place. Likewise, Gina is manipulative and ruthless—her only interest seems to be having fun at the expense of someone else. Gina’s role seems to contradict the gothic elements because in the typical gothic novels, only the men are villains. Gina abuses Inés by kidnapping and drugging her, and she also exposes Inés to a world of sexuality when she forces Inés to participate in endless orgies. However, Gina is a villain only to Inés and not to anyone else, especially Javier. In fact, Javier’s main pleasure comes from torturing the two women Gina and Inés together. Although Gina tortures Inés for pleasure, she is at the same time a victim of Javier’s abuse. Gina, like Inés, lacks the strength to defend herself against Javier, yet unlike Inés, Gina is able to exert her dominance and strength by torturing Inés.

While Inés is clearly a victim and Javier her oppressor, Jesús, Inés’s cousin, is difficult to place into either category because he seems to be both powerful and powerless at the same time. On the night of Inés’s disappearance, he comes to Paula livid and exasperated. It appears that

Jesús is worried about Inés, yet he does not go to the police to report his cousin missing because, according to him, she has not yet received proper documentation from Ivette about her current status in the foreign country. However, the real reason that Jesús does not go to the police is because he is a coward—he is too scared of what Javier will do to Jesús if he tells the police the truth about Javier’s involvement with the disappearance of Inés. If he really cared about his cousin, Jesús would go to the police to protect Inés and make sure that she is found before it is too late. Unfortunately, he fails to protect her and when Inés’s mutilated body appears one day in a city morgue, no one cares to claim it. In the end, Inés is the victim of them all: villains and cowards, all too focused on themselves to help an innocent and scared adolescent from being thrown around inadvertently in a whirlwind of satanic rituals, sexual pervasiveness and physical abuse.

Gothic characters are all multi-faceted and they represent a dark side of humanity. In Elena Garro’s novel *Inés*, death turns out to be the only passage to freedom from oppressive existence. The end of the novel is not truly the end of the story because there are other women, such as Paula and Irene, who Javier will torture in the future. These women will never escape the monstrosity of a patriarchal world until they, like Inés, are liberated through their deaths. Through her novel, Garro criticizes the role of women in a male dominated society and suggests that women will never be free until they realize that they are merely acting out their role as victims, a role into which society has placed them. Women will only find independence once they have freed themselves from their victimizers. Garro’s novel urges women to defy their villains and use their own power against those who try to control them before it is too late and they become, like Inés, “an unknown”—a body with no mind or voice of its own.

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Natural Born Killers: Colombia and Its ‘Sicarios’ in Rosario Tijeras (1999) and La Virgen de los Sicarios (2001)

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Abstract

In this essay I will explore the question of the sicario, or young hired assassin, as presented in the novel Rosario Tijeras (1999) by Jorge Franco and in the film Our Lady of the Assassins (2001), directed by Barbet Schroeder and based on Fernando Vallejo’s novel La Virgen de los Sicarios (1994). I will analyze the lives of the characters Wilmar, Alexis and Rosario Tijeras in order to determine the external factors that prompted each one to become a paid killer. I will consider the violence that exists in Medellin, Colombia, and the powerful influence that this violence has on the city’s youth. The idea of Medellin as a metropolis without options will be explored. Furthermore, I will examine the absence of values and principles within the world of sicarios. Through various examples from the text and the film, I will demonstrate that, due to a problematic family structure, inadequate schooling, and a resulting lack of sense of security, Medellin’s youth have few options other than the world of crime. My analysis will corroborate that sicarios are the natural product of a violent territory and are the victims of the destructive ideals endorsed by their own society.

Throughout the world, the city of Medellin in Colombia is often recognized as a “murder capital.” Gun shots, stabbings, cases of rape and cold blooded assassinations are everyday occurrences there. It is not surprising, then, that the violence in Medellin has an enormously negative impact on the city’s youth. In his novel Rosario Tijeras (1999), Jorge Franco Ramos explores this complex situation through his eponymous character who happens to be a female assassin. Influenced by violence and poverty, Rosario, an adolescent trouble maker, chooses a life of crime. The girl resembles many other young assassins in the sense that her surroundings are a determining factor in her fast-paced and ultimately tragic life. Overall, she shares much in common with Wilmar and Alexis, two adolescent hit men from the film La Virgen de los Sicarios, directed by Barbet Schroeder and based on Fernando Vallejo’s novel of the same title. Like Rosario, Alexis and Wilmar live their lives as hit men or ‘sicarios’ in Medellin.¹ Essentially, all three characters are born into a violent society devoid of morals, principles and high standards. Due to a problematic family structure, inadequate schooling, and a resulting lack of sense of security, these three protagonists have few options other than the world of crime. In this essay I will argue that sicarios like Alexis, Wilmar and Rosario are the natural product of a

¹ The term ‘sicario’ refers to an adolescent assassin who works for Colombian drug lords or gang leaders. He or she is usually recruited from poor neighborhoods at a very early age, and trained in the use of weapons and explosives. Devoid of ideological convictions, they pride themselves in their toughness and ability to complete their assignments. Victims of *sicarios* include presidential candidates and members of rival drug organizations, leftist party and union leaders, judicial officials, police officers, prominent figures in the media, university professors, and regular civilians who happen to be in the wrong place at the wrong time.

violent territory and are the victims of the destructive ideals endorsed by their own community.

In order to understand the life of a sicario, it is necessary to take into account the fact that the paid assassin is born into a world of brutality and destruction. That is to say, the sicario is a witness to violence from a very young age. In Rosario Tijeras, for example, Franco Ramos writes that Rosario was raped for the first time at the tender age of eight. As a result, she learned to defend herself with instruments such as a pair of scissors, and much later, with a pistol. Since Rosario was sexually assaulted as a young child, her only remedy was to learn to take justice into her own hands (Cabañas 18). Unfortunately, Rosario discovered that scissors, a knife or a handful of bullets could be used to resolve any problem that she encountered in life. This mindset is demonstrated throughout the text, but one specific example involves a situation where Rosario uses a pair of scissors to take revenge upon a man who had sexually abused her in the past. Her method of retribution is unique: She allows the man into her bedroom, begins to seduce him, and then, as his eyes are closed and he is mumbling about how delightful the situation is, she uses her scissors to snip his testicles (Franco 31). Rosario's use of violence is also illustrated during a confrontation between herself and another driver, following a car accident. When the other driver suggests to Rosario that she might have braked in an untimely manner, Rosario becomes enraged, leaves her car carrying a bag with her pistol in it, and presumably shoots the man (Franco 98-99). It is evident that, to Rosario, aggression and belligerence serve as immediate answers to all of her life's problems.

Similarly, violence plays a fundamental role in the lives of the sicarios Wilmar and Alexis in the film La Virgen de los Sicarios. The two are brought up amongst robberies, kidnappings, hijackings, crossfire and homicides. Essentially, Alexis and Wilmar are involuntarily submerged in a destructive and brutal culture. For this reason, it is comprehensible that they are active participants in the violence that surrounds them. Alonso Salazar, an author of several testimonial texts on Colombian sicarios, investigates the tie between violent youth and a combative culture in his article "Young Assassins of the Drug Trade." According to Salazar, for the children of Medellin, "first it becomes normal to witness killing and dying; then, to kill and die." In the same article Salazar adds that the sicarios "have no clear notion that they are in any way acting against social norms." What is certain is that death is an everyday occurrence for the sicario, and it is absolutely normal to kill and to die (Bergquist 9). Obviously, sicarios such as Rosario, Wilmar and Alexis know only one thing-- violence. For this reason, they can be accurately described as the natural product of a destructive culture.

In addition to being the victim of bloodshed in their own society, the sicario is an unfortunate victim of the failing social structures that exist in cities like Medellin, Cali or Bogota. Specifically, young people such as Alexis, Wilmar and Rosario become sicarios due to the absence of education and proper family structure in their lives. It is well known that education plays an important role in the future success of a child. Without a thriving education system, young people cannot acquire the knowledge and skills that are indispensable for becoming an accomplished citizen. In Rosario Tijeras and La Virgen de los Sicarios, it is evident that inadequate schooling has an enormous impact on the youth's way of life. Rosario, Alexis and Wilmar do not attend school; instead, they spend their time wandering the streets. In his book America's: The Changing Face of Latin America and the Caribbean, Peter Winn confirms that there is a strong connection between Medellin's delinquent youth, substandard education and the Colombian government. According to Winn, one of the main problems is that the Colombian government has failed to invest in the school systems (477-79). Naturally, the consequences are devastating and long lasting. Instead of spending each day in a safe, nurturing school

environment, Medellin's young people spend endless hours on streets plagued by guns, drugs, gangs and enemies. This creates an absurd situation where gang leaders become the only true authority in children's endeavors, and robberies serve as a practical lesson on how to ascend socially.

Another problem in Medellin is the flawed family structure. As one examines the sicarios' lives in Rosario Tijeras and La Virgen de los Sicarios, it is clear that the traditional family does not exist. In the novel, for example, Franco Ramos demonstrates through a conversation between Rosario and two other characters the abnormal construction of families living in the slums. Rosario begins by saying that the man who lives with her mother is not her father, and that she has no idea where her real father is. Later, she reveals that her father had abandoned her family when she was born and that she could care less about his whereabouts (Franco 15). In the essay "El sicario en su alegoria: la ficcionalización de la violencia en la novela colombiana de finales del siglo XX," Cabañas attempts to explain and analyze Rosario's family structure. For Cabañas, Rosario's family lacks the traditional father figure, and consequently, Rosario is left to search for a surrogate male to protect her and shelter her from a life of poverty (19). Obviously, sicarios like Rosario suffer when a father figure is not present in the home. In many cases, the children of a broken family lack discipline, stability, security and positive role models. Salazar refers to the same problem when he states that: "In many families, not only family love, but the necessary family discipline which comes with positive models of authority is missing. This is most obvious when the father has abdicated his family role" ("Young"). Unfortunately, when a father abandons his family, his children must seek an alternate authority figure. In La Virgen de los Sicarios, neither Wilmar nor Alexis knows his father. As a result, both adolescents begin to admire Fernando, the middle aged, homosexual narrator who, out of loneliness, showers them with presents, attention, and eventually love. In a way, an unusual father-son relationship develops between Fernando and the boys. Even though Fernando tries to instill values upon Alexis and Wilmar and teach them how to live peacefully, it is simply too late for the wild youth. Since the young men have already acquired a violent way of life and a negative vision of the world, Fernando is unable to influence much their mind-set.

In other cases where a father is absent from his family role, children often begin to admire prominent gang leaders in their community. In the article "The 14-Year-Old Hit Man," Eliza Griswold demonstrates this phenomenon in her interview with a young hired assassin named Tiny. Tiny's situation is not unique; he does not know his father, and all of his uncles are either delinquents or dead. As a result, "Tiny has only his gang bosses for role models." Naturally, gang leaders are far from being exemplary role models for society's youth. Mob bosses are oftentimes involved with organizing crime, meddling in drugs, robbing, stealing, killing, and creating a world of enemies. Furthermore, most of them have very little experience with formal schooling, if any. For gang members, education consists of concepts such as self defense, weaponry usage, and methods of killing-- learning that is considerably different from the conventional education system where students acquire the necessary skills of reading, writing and arithmetic. Bosses of crime organizations are clearly not reputable teachers or superb role models. When young people turn to them to fulfill such positions, disappointment and failure are inevitable. Simply put, gang leaders are unable to provide children with the skills, knowledge, love and moral support that they need to flourish. Due to a rupture in the traditional family structure, many children must resort to a life of delinquency and violence.

Aside from being the natural product of a destructive culture that lacks education and a strong traditional family unit, sicarios are also victims of the negative ideals circulated within

their own communities. In the world of Rosario Tijeras and La Virgen de los Sicarios, for example, life seems insignificant and senseless (Bergquist 9). It is evident that Rosario, Wilmar and Alexis place very little value on both the human body and human life. This is exhibited by their ability to kill someone without ever feeling any remorse. Obviously, sicarios like Alexis, Wilmar and Rosario live in a culture where there is no respect for human existence. After all, they are surrounded by people who never become unsettled at the sight of a cadaver on the street. The editors of Violence in Colombia, 1990-2000: Waging War and Negotiating Peace explain this mentality when they write that young people “convert life, their own lives and those of their victims...into disposable objects” (9). What is certain is that life is not valuable to the sicario. Salazar also demonstrates this mentality in his book Born to Die in Medellin. There, a young hit-man named Antonio states that “You learn to kill without it disturbing your sleep” (13). This state of mind is, without a doubt, the result of a tainted culture that places very little emphasis on the value of human life. In the end, sicarios are able to exist because cities like Medellin do not condemn the devaluation of living beings.

In addition to being victims of a culture that fails to respect human life, sicarios suffer from living in a society that stresses the importance of material goods. Specifically, young contract killers are victims of consumerism. Miguel Sirgado, journalist, explores the tie between sicarios and consumerism in his article “Rosario Tijeras, el vertigo hacia la muerte.” According to Sirgado, young people work as sicarios because they can earn money quickly and easily, and this style of life “allows them access to the things that society establishes as ideals.”² In the film La Virgen de los Sicarios, it is clear that consumerism has an enormous impact on the lives of Wilmar and Alexis. In one scene, Fernando, the rich sugar daddy mentioned above, asks Alexis what he would want in life, and Alexis responds with a detailed list that includes Reebok tennis shoes, Ocean Pacific t-shirts, Calvin Klein underwear, a Honda motorcycle, a Whirlpool refrigerator, and several other popular name brand items. Obviously the young sicario does not want just the essentials. Rather, he craves designer clothing, a popular vehicle and the newest appliances—everything that popular culture designates as desirable—hoping that these objects will elevate him to the level of first world youth. What he does not realize, however, is that his environment has been greatly corrupted from within and that no popular, globally recognized goods can truly repair this situation.

Even though society tends to promote the buying of luxury items, a lack of education greatly intensifies the problem for many young people. When quality schooling is unavailable, that void tends to be filled by whatever is within reach. In many cases, money-hungry mafia bosses and advertisers take the place of teachers, family and friends. Socialization, then, becomes highly superficial and heavily influenced by mass media. Essentially, images of televisions, fast cars and designer jeans are circulated among an almost illiterate audience. In the end, it is clear that sicarios are the result of a society that promotes the buying of expensive material goods by targeting uneducated, misguided youth.

In conclusion, young paid assassins like those presented in Rosario Tijeras and La Virgen de los Sicarios are victims of the depraved and bellicose societies that exist in many communities in Medellin and other Colombian cities plagued by drug traffic. The lack of family structure and schooling in these localities causes many young people to turn to the streets in an attempt to fill the enormous voids in their life. Of course, street life rarely provides juveniles with the love, guidance and security that they so desperately need. Instead, it transforms them into dangerous hit men who learn to kill with absolutely no remorse. Since sicarios like Rosario, Wilmar and

² The translation is available online.

Alexis are submerged in a destructive environment, they learn that a pistol is necessary for survival. At the same time they discover that their own communities place very little value on the human life. Therefore, sicarios are not concerned by the fact that their own days are numbered. Essentially, they themselves have been converted into a commodity-- a disposable weapon in the world of gang leaders and indifferent society. In the end, sicarios are the victims of their own community, of the state, and of society in general. A hauntingly tragic phenomenon, they remind us of the frailty of human life, and of a need to protect the most precious resource of this world, its youth and its children.

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Knowledge and Truth: Distinct or Synonymous?

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Are knowledge and truth interchangeable terms? Can we ever claim to know truth? In the academic world, a world in which the pursuit of knowledge in search of truth is a passion that drives most, these questions become relevant as we assess what “knowledge” and “truth” mean. According to *The Cambridge Dictionary of Philosophy*, knowledge is “knowledge of facts or propositions” (emphasis mine). Truth is defined as “the quality of those propositions that accord with reality, specifying what is in fact the case.” Knowledge and truth are categorically different from each other; the former occupies the realm of epistemology and the latter belongs to metaphysics.

Epistemology, the study of human knowledge, concerns itself with *how* human beings access information and justify their claims about what exists or what is claimed to exist in the external world; metaphysics, on the other hand, deals with the study of facts, i.e. what *does* exist or is claimed to exist (*The Cambridge Dictionary of Philosophy*). In other words, epistemology is the study of human beings relationship to metaphysics, what actually *is*, i.e. reality.

Maureen Linker in her article, “Epistemic Relativism and Socially Responsible Realism: Why Sokal Is Not An Ally In The Science Wars,” distinguishes between epistemology and metaphysics:

Assertions about ‘facts’ or ‘what exists or is claimed to exist’ are metaphysical statements about the ‘furniture of the universe’. Questions about how we can know about what exists or how we may justify the existence of objects in the universe, are the domain of epistemology. [...] [T]hat knowledge may be relativized to individuals or social groups is not to say that there are no ‘facts of the matter.’ The facts may exist but could be unavailable to individuals or social groups from an epistemic standpoint” (60).

In other words, knowledge is relative to a person’s or group’s access to metaphysical facts, and thus, knowledge is more about the epistemic relationship of human beings understanding the facts as opposed to the actual existence of those facts. Knowledge is of the epistemic realm; truth is of the metaphysical.

According to this distinction, knowledge is dependent upon humans, while truth is independent of humans – it exists regardless of whether or not it is known. It could be alternatively said that knowledge is human interpretation of facts and data is the pursuit of understanding truth (but knowledge is not itself truth).

We see this distinction between the two terms in science; as we practice the scientific method, we are constantly “discovering” new bits and pieces of information that allow us to add to our data base and often requires us to expand our knowledge base to include the possibility of modified or new theories to explain the external world. We don’t act as if everything we know now fully explains what *is* (the metaphysical world); we act with the belief that we can discover truth and that it is a continuing process.

Looking at history, we see that knowledge can be false. Galileo was considered a fool for believing the earth revolved around the sun. The heliocentric theory, first published by Copernicus and given support by Galileo's discoveries in astronomy challenged the knowledge of the day that held a geocentric theory for explaining the heavens. Galileo was excommunicated from the Catholic Church for publishing his findings and they were dismissed; it was not until later that the heliocentric theory was largely accepted.

Thus it seems that if the scientific method, a method widely accepted in the academic and intellectual world on a mass scale, is open to changing our claims for knowledge based upon new information gathered, then in philosophy we should also consider thinking of knowledge in this manner. Part of discovering truth is having the willingness to subject our knowledge to modification and change in light of new evidence/information.

Knowledge is part of the system of life we engage in – the language we use in our pursuit of truth. Pursuit of truth is much like a long-range coherence theory of knowledge, which theorizes that a coherent system, existing over a long period of time and subject to revised beliefs about truth (i.e. knowledge), if remaining consistent, will produce a stable, coherent picture of reality (i.e. truth). This accords with the theory behind the scientific method; beliefs are formulated and if the evidence fits the theory you currently ascribe to, it is considered tenable unless and until new information that challenges the theory presents itself. Then, in light of the contradictory evidence, the theory either has to change or be modified to accommodate the new evidence; however, when we change theories or discard theories in favor of new ones, we do not believe that objective truth has changed – just that our knowledge of that truth has changed.

Thus, human knowledge is constantly changing but truth remains unchanged.

One can have all the data (knowledge) but miss the truth; one can have knowledge but line up all the data points/evidence and formulate an understanding of truth in a wrong way that does not accord with *actual* truth. Many of the reasons this can happen include deception (senses can be deceived, sources can turn out to be unreliable, etc.), starting with presuppositions that one is unaware of, having a limited perspective/framework, etc.

We can have paradigm shifts in our thinking, shifts where if we are given a new bit of information, all of a sudden, the manner in which we interpret the facts totally changes; it is important to note, however, that when this happens, we don't question whether reality (i.e. truth) has changed. We claim that our knowledge *of* that truth has changed.

Knowledge is human interpretation of facts in the pursuit of truth, which is in turn defined as a correct understanding of those facts. Knowledge, both in science and philosophy, is subject to personal biases through presuppositions; not even the strictest scientist who wishes to be entirely objective in the search for truth about the external world can escape having presuppositions; her very idea that the scientific method allows for objectivity presupposes an ideology that she is using to filter facts and data about the physical universe.

We see evidence of presuppositions unknowingly affecting interpretations of data in the "sperm/egg" example. In science, the prevailing theory about conception assumed that the egg was passive and the sperm were the aggressors, but that theory has recently been challenged. Researchers at Harvard now propose that the evidence, the same evidence that former researchers had access to, actually appears to suggest a different interpretation, i.e. one that suggest that the egg pulls the sperm inside itself. It has been suggested that gender stereotypes affect how the data was interpreted; the original perspective had underlying it a more traditional patriarchal presupposition that perhaps affected the interpretation of the data, while the latter researchers had a different presupposition that allowed for a more matriarchal interpretation

(class discussion 03-08-04).

In addition, knowledge is known within a context. Ludwig Wittgenstein in *On Certainty* argues that knowledge is context sensitive. We can know only as far as our system/framework allows us to know. It is possible, thus, that we are incapable of having access to all information, and thus we make judgments about what we do and do not know based upon what access we have. For instance, suppose we are at sea and someone were to ask me if I see a pirate ship, and I look out over the ocean and see nothing on the horizon, I then make the claim that there is not a pirate ship. Assuming I do not know about telescopes and my only access to obtaining that information is my eyes, I can claim that I know there is no pirate ship. However, my knowledge does not accord with truth, i.e. reality, for a few miles off, beyond the capabilities of the human eye, there is a pirate ship and it is sailing my way. Someone who had access to better perception abilities, a larger scope of seeing (through use of scaling up a mast or using the technology of a telescope) would have more information at her disposal and thus would give a different answer, that yes, there is a pirate ship. Truth has not changed in this case; merely the access of human beings to knowledge of that truth. In other words, we must always be willing to admit that we may be limited in our understanding/access to information about the external world and must always be willing to change our claims about truth. (i.e. knowledge changes depending upon our framework).

Thus, our knowledge is subjective; it depends upon the reliability of our perceptions, our acknowledgement of presuppositions that may be affecting how we interpret data, and our acknowledgement that we are limited to understanding relative to our framework/perspective. Knowledge can change based upon access to new evidence and new ways of thinking about evidence.

One could object and say that in those cases where “knowledge” has changed and we now believe something new, that while we may have been well justified in believing we had knowledge, we did not, in fact, have knowledge. But this poses a problem, for then, we have to be willing to say that there is very little that we can “know” if knowledge is the equivalent to truth. There are those who might be comfortable in saying that, but when it comes to everyday living, when it comes to the scientific method, when it comes to issues of practicality, we all want to make claims that we “know” this or that fact. I want to say that I “know” tomorrow the sun will rise; I live and act as if I believe that it will, but I am also willing to modify that claim to knowledge if evidence presented itself that was contrary to that claim to knowledge. Thus, I am willing to say that knowledge does not equal truth, and that while I may have great probabilistic reasons for believing that the sun will rise tomorrow morning, based upon past experience, based upon current scientific understanding, etc. I don’t have to claim to know it absolutely for it to be sufficient to act upon. In other words, simply because I am not 100% sure that the sun will rise tomorrow does not mean that I don’t have knowledge that it will; “knowledge,” is, in a sense, a “language” or practice we engage in for practical reasons.

Similarly, Wittgenstein argues that having knowledge implies that it is possible to doubt that knowledge; that certainty is only known through the possibility to doubt (class handout, “Wittgenstein’s Epistemology” 04-02-04).

Thus, we see that to define knowledge as being equivalent to truth is not pragmatic because we have to be open to the possibility of modification/change in our claims about the metaphysical (i.e. truth), and if we limit knowledge to being truth, then the term loses its usefulness, for we can claim to know very little.

Fred Dretske, in his theory of knowledge, would agree: only deductively true logical claims can be known absolutely (Baergen 110-114). However, even if we grant that knowledge in this case accords with truth, is it not possible that our understanding of logic is perhaps limited, and that while deductive logical claims may be true to us in relation to our framework, if we were removed from that framework and given a greater understanding or access to evidence, then might we not have to change our claims about knowledge?

When we look at religion, we find further examples of how knowledge and truth are not the same. The existence of dozens of religions in the world provides a good starting point; most, if not all, involve the existence or nonexistence of a deity. (I assume, for the purpose of argument, that “atheism” is a “religion.”) There is one truth out there – either a deity exists or does not exist; you have multiple religions making claims about truth, but the claims of knowledge seem to be of a different nature than the truth of the matter. Either there is or is not a deity; either the atheists are closer to the truth or one of the religions that postulate a deity is closer to the truth. This seems a clear example of the distinction between epistemology (claims of knowledge) and metaphysics (actual truth). Metaphysics exists outside man’s justification; mankind justifies many claims for knowledge but there is only one truth; absolute truth exists regardless of how humanity chooses to believe/justify their understanding of it, and thus it is in its own realm.

In Ethics, we again see the distinction between epistemology (moral knowledge) and metaphysics (moral truth) in the way we justify our behaviors; we generally assume that there are better or worse ways to behave, and even for those who don’t ascribe to a worldview that dictates moral absolutes, there is the often held belief by many philosophers that there are basic moral truths independent of your beliefs. Termed “ethical intuition,” the basic idea is that there are absolute moral principles that exist, and that you can gain knowledge about these principles. The underlying assumption is that the moral principles exist outside your framework as an absolute. Baergen, paraphrasing H. A. Pritchard on the subject, states:

[T]he apprehension of a (prima facie) moral obligation is immediate in the same sense that the apprehension of certain mathematical truths is immediate; that is, your belief that you must (prima facie) keep your promise to water your grandmother’s flowers has the same sort of basis as your belief that $5 + 7 = 12$. In both cases, insight into the nature of the subject allows one to see that a certain predicate applies to a particular object (for example, that 12 and the sum of 5 and 7 stand in the equal-to relation, or that moral obligation attaches to your watering the flowers).

The point is that people justify their moral actions according to their understanding of what is right and wrong; thus (similar to knowledge) while one might be justified in their knowledge of ethical principles based upon their framework/access to information, their justification could still not accord with truth; even though they might be justified in their knowledge of what is and isn’t right and wrong, they might be wrong because moral truth is independent of human knowledge of morality.

Thus, I have attempted to show in this paper that there is a categorical distinction between knowledge and truth, belonging to epistemology and metaphysics, respectively, and the line should not be blurred. Furthermore, I have argued that knowledge is our conception of truth and may or may not accord with actual truth (modified from Linker 67). As such, knowledge

must always be open to modification and change. Recognizing this, one can never claim to absolutely know truth, for there always remains the possibility that there is new evidence or another perspective that would require us to modify our claims of knowledge. Knowledge, while it is a pragmatic tool we use in our pursuit of understanding truth, is not truth itself.

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Control, Submission, and Meaninglessness: An Optimistic Look at Lethem's *Amnesia Moon*

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Jonathan Lethem's *Amnesia Moon* conveys a surreal, post-apocalyptic world filled with dozens of realities and as many strange characters; in other words, it can be termed a 'fantasy novel.' It is also a very postmodern novel; that is, it rejects established authority and tradition in favor of a more chaotic and/or pessimistic point of view. Odd, then, that the ending of the novel ends up being strangely optimistic. This is not necessarily contradictory. Rather, Lethem mixes the various elements that make up both the fantastic and the postmodern and has created a novel that is in many ways unique; it is a novel that parodies and satirizes American life, but leaves the reader with the optimistic view that creativity, forward-thinking, and individuality are much stronger than the forces that oppose them.

The story begins in the town of Hatfork, Wyoming. Nobody in Hatfork (and indeed in the entire country of Lethem's America) remembers anything that happened earlier than five years ago. That is because five years ago something happened which turned the town into a nuclear wasteland, complete with mutated people who are covered in fur. The town is run by a man simply known as Kellogg. Kellogg has the ability to 'dream'; this takes on great significance in Lethem's world, since not only can normal (and mutant) people NOT dream, but also Kellogg has the power to shape reality to the way he sees fit. His dreams consist mainly of one day leading the people of Hatfork to the sea, where they will begin a new, aquatic life under its surface...whether they want it or not. Not that anyone cares, anyway; the occupants simply accept their dire predicament in stride and don't think to do anything about it. It has a strange, 1920s Great Depression air about it.

In a run-down movie theater in town lives 'Chaos.' Although he too has no memory of his past, he can dream as well; his dreams goad him to leave town, however, and head to San Francisco. He doesn't quite understand why, but he knows that the city has something to do with his old life, and he takes the opportunity to seek it out. When Kellogg invites Chaos to talk about his latest scheme, Chaos whacks Kellogg with a tire iron and escapes in Kellogg's car, taking with him a young mutant girl named Melinda.

As he journeys, he begins to learn clues about the past, most notably that his real name is Everett Moon. He also slowly finds that the world is not all burnt-out like Hatfork. Each town he encounters is run by a different 'dreamer' like Kellogg, each of whom has a different take on reality. But despite the differences in their looks, these towns and cities have more in common with Hatfork than they realize. Each of them is under the thumb of bureaucrats or unseen totalitarians, and the inhabitants simply take all their grief in stride; in essence, they all conform simply to avoid being seen as outcasts or to avoid destruction.

Nowhere is this conformity more evident than in Vacaville, where Everett meets Edie, a woman whom Lethem describes as having terrible luck. This 'bad luck' is often orchestrated by a government bureaucrat named Cooley, who lusts for Edie terribly; so much so, that he'll do anything to get her to move in with him, including rigging her 'luck tests' so she'll always fail without him. In Edie's life and the rest of Vacaville, Lethem portrays the citizenry as, essentially, vapid and unconcerned with little else other than obtaining status and keeping the peace.

Everyone in Vacaville moves once a week into a new house, for no other reason than the government tells them to. Everyone watches and comments on the exact same TV shows, which do little more than make the ‘moving around’ aspect look glamorous and chic. Any out of place behavior is corrected with the issuance of citations. This mindless behavior is, of course, encouraged; after all, if everyone is too busy handing out citations and watching TV, they won’t notice how ridiculous their behavior is. This sort of parody of the paranoia of ‘Big Brother’ style government (i.e., the all-seeing eye keeping control via useless, shallow propaganda) is very postmodern. Palmeri, in his exploration of paranoia within the surreal, explains: “High postmodern works reveal both an anxious apprehension of a newly realized and effective system of power and knowledge...impossible even to comprehend in its totality, but also a subversive, even parodic skepticism about such phenomena...” (4). This quote highlights how Lethem uses “parodic skepticism” when dealing with the Vacaville government. Like as in George Orwell’s *1984*, the control the government has is vast and manipulative and should be viewed with “anxious apprehension,” but unlike Orwell’s pessimistic view, Lethem goes for the “parodic skepticism.” After all, if this government is all-powerful and vast, how is it that one person like Everett can come along and throw a figurative monkey wrench in the works?

The McDonaltonians are even worse off than Vacaville. They are a group of squeaky-voiced teens who run a McDonald’s, and run it quite well. The trouble is, there is no reason to run it any longer, since the town where the restaurant is located became deserted many years ago. In fact, even the managers have skipped town. The teens are emaciated and starving, but do not eat any of the food around them because they could get in trouble with the corporate management. They are stuck in the modern day equivalent of Bentham’s Penopticon prison; they don’t try to escape their situation because an invisible presence could be watching them, and thus the system is self-regulating. If they took one minute to stop mopping the floors, they’d see that their work is all for naught. But they don’t, and so they continue to plod along in a senseless, meaningless job. Again, Lethem’s satire at work.

For all this, it would be hard to see the optimism present in the novel, but it exists. The key to it all is in Everett and his journey. Though he starts out just as downtrodden and accepting as everyone else, Everett has the spark of dreams; the very fact that he can dream and others can’t is a clear example that Lethem wants Everett to be seen as someone special. That he shares this talent with those in charge is even more important. Unlike the others, who use this gift to manipulate humanity, Everett merely seeks to find himself in all of this mess. His journey is typical of many fantasy works; namely, he is on a “quest” to find answers.

Initially, this quest is very lonely, as his only companionship is the fur-covered Melinda whom he drags along on his escape from Hatfork. But as his journey continues, he becomes more and more aware that none of the towns he visits are worth living in either. Why would he ever want to? Everywhere he goes turns out to be someone else’s dream. Lethem explains this through Boyd, a hippie Everett meets on the road. “And I’ll tell you where you’ve been living: in somebody else’s dream. Probably still are, or will be again soon” (Lethem 60). This is not what Everett wants; he cannot be what someone wants him to be, he can only be who he is. The identity of Chaos he has developed in the five years since his memory loss is more real to him than the Everett he used to be. The friends he meets in San Francisco are a testament to this; they constantly try to remind him over and over that he used to be Everett, and their friend. But they mean nothing to him. His past is like his memory: erased. At the end of the novel, Everett is leaving behind all the towns he’s visited: San Francisco, Vacaville, Hatfork, and the rest. But Edie and her family, whom he now loves, are going with him. To emphasize further that he is no

longer his old self, they call him Chaos, not Everett (247).

There have been some other analyses of the ending of the novel. Duchamp, for instance, argues that rather than seeking the fleeting dreams available in each reality, Everett finds in himself and his 'family' greater solidity than any of these various places offer. While I do like this argument, one element of it does not work. Namely, that Everett is "saved, as it were, by the love of a good woman and the surround of what turns out to be a full-blown nuclear family..." and that "Vacaville...intolerable as it is, is the place where Everett becomes fully real and realized as a human being..." (3). He is already aware that his future is with Edie, and despite the horrible things inflicted on her and her kids by Cooley, Everett doesn't let that stop him from getting them out of there. Edie and the family do not save him. Rather, he saves them the way he saved himself; that is, by dragging them away from the harsh, cruel reality imposed upon them. I argue that Lethem states it is up to the creative individual to form his own dream, not to live within the rigid structure of another's. Everett succeeds by sharing his dream, not by forcing it.

Lethem does suggest that Everett's desire to pursue his own dream, though, is not without consequences. Early in the novel, a helicopter chases and then fires a sticky substance at his car which causes it to stop dead, and it hardens to an impossible-to-remove shell. A similar helicopter is seen chasing his car at the end of the novel. Lethem could suggest by this second helicopter that Everett may not fully be able to escape the dreams of others and instead be haunted by them forever. I prefer to think that Lethem chose the helicopter at the end to represent what could happen if Everett ever stops pursuing his own dream. If Everett wavers from his chosen path, he will undoubtedly get sucked back into following the dreams of others. The enigmatic final words of the novel, "Everett concentrated on the road" (247) suggest Everett does have the capacity to keep himself on the right path. He will not let the threats of the world keep him from his goal.

On the topic of surrealism, San Juan says, "The moments of creation and destruction coalesce in the surrealist technique of creating the marvelous and precipitating a new altered understanding of reality" (35). Lethem begins the novel having the world already destroyed. But he uses the hopelessness and malaise created by an unexplained cataclysm to begin a new creation. Everett's loss of memory allows him to leave behind a past that is not really his own anymore. In the five years of his existence as Chaos, he has forged for himself a new identity, and with his power to dream he is capable of living in a world of his own choosing. The idea that Everett is willing to throw off his past and reject the established authority shows Lethem's use of the postmodern; that the novel contains a quest, strange powers, and mutants shows his use of fantasy. Together, the postmodern and fantasy elements make a powerful statement: Change, individuality, and forward-thinking are the tools required for one to truly be free.

Or, as Lethem suggests, we might all end up working at McDonald's forever.

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Changes in Attitude Toward Comedy and the Stage Reflected in Congreve's *The Way of the World* and Steele's *The Conscious Lovers*

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Comedy has its origins in the festivals of worship to the heathen gods and goddesses that give way to licentiousness, celebrating, fun, and bawdy, obscene, sexual behavior and language in their participants. Plays exhibiting these conventions were performed before an audience that expected licentious, celebratory entertainment filled with overtly obscene, sexual references. It was a sensual, worldly audience concerned with physical happiness such as singing, dancing, drinking, feasting and sex. These conventions carried into Restoration comedy, and a faction of society strongly opposed this type of entertainment, especially toward the end of the 17th century. Their general claim was that the display of immoral behavior on the stage encouraged the increase of such behavior in society, especially among the young people.

Until this time, the aristocracy and gentry, whose immoral lifestyle is portrayed on the stage, largely patronizes the theatre. However, as England's economy evolves into a more commodity oriented and less agrarian based economy, the middle class comes into power and encroaches on this place of entertainment. This middle class brings their sober attitudes and preferences with them. William Congreve's *The Way of the World* in 1700 and Richard Steele's *The Conscious Lovers* in 1722, reflect the changing social attitudes toward what is appropriate entertainment for the stage in the early eighteenth century. Though both playwrights set out to effect the reformation of the stage, Congreve contends that the characters presented as the objects of laughter in preceding comedies provide entertainment that is neither sensitive nor appropriate for the discriminating audience, while Steele states that he intends to inculcate morality and to avoid imparting immorality in his play. The turn these playwrights take with their plays marks the end of comedy, as it was known.

Congreve expresses his attitude toward the plays written by his contemporaries in the letter of dedication addressed to Ralph, Earl of Montague:

Those characters which are meant to be so ridiculous in most of our comedies are of fools so gross that, in my humble opinion, they should rather disturb than divert the well-natured and reflecting part of an audience; they are rather objects of charity than contempt; and instead of moving our mirth they ought very often to excite our compassion (251).

The audience he addresses in his play is accustomed to these gross characters. He objects to the reliance on buffoonery, the emphasis on spectacle, the ridicule of infirmity, farce, and grotesque exaggeration employed by his predecessors and his peers. He wonders how those with a sensitive and discriminating mind can find such gross, mean exposure diverting or amusing.

In his play, *The Way of the World*, Congreve seeks to provide his audience with the tasteful diversion that he considers appropriate for the stage. Most of the playwrights encountered prior to and during the Restoration comedies expose, criticize and ridicule groups or

persons in the audience. He creates his characters as a kind of “humour,” rather than base them on particular persons, to counter this tendency on the stage. He expresses the thought behind the creation of his characters in the letter of dedication:

This reflection moved me to design some characters which should appear ridiculous, not so much through a natural folly (which is incorrigible and therefore not proper for the stage) as through affected wit; a wit, which, at the same time that it is affected, is also false. (251-52)

This description makes evident that Congreve is comfortable laughing at a Sir Fopling Flutter who learns and puts on his foppish mannerisms purposely, making a false impression on those around him rather than being his natural self. In this case, Congreve is not laughing at someone’s infirmity, but rather the silly behavior the character chooses and exhibits.

We see this concept of the use of affected behavior in comedic characters reflected in Congreve’s creation of Witwoud and Petulant, who acknowledge that they put on their affectations for the entertainment of those in their company as well as themselves. Thus, when the audience finds that Petulant sneaks out of a coffeehouse and has himself paged to impress those present, it is amusing. It is not the same as it would be if his behavior was the result of a mental impairment, which should lead the audience to compassion rather than ridicule.

Congreve contributes to reform through creating his humourous characters, but it is evident that he maintains conventions of comedy in his characters. Though they are not the ridiculous, outrageous characters, they are nevertheless flawed human beings. Mirabell is a picture of the gentleman of the day, with his tendency to lie and scheme in order to get what he wants, and the admitted relationships with other women before Mrs. Milamant. Though he is in love with her, he has not been chaste. Mrs. Millamant is not the picture of perfect virtue, either as she entertains other men’s advances while admittedly in love with Mirabell. She is consistent in her behavior, however, and exhibits the common ways of the typical beautiful, desirable coquette. Fainall and Mrs. Marwood are the deceptive evildoers, scheming to rob his wife of her fortune and run away together. He is introduced as a sadistic rake in the opening of Act 1 where he refuses to play cards with Mirabell because he shows indifference when he loses and Fainall wants the perverted joy of gloating over his opponent.

Though the characters and plot maintain many conventions presented in previous comedy, they are not presented in the same tasteless manner which Congreve objects to. They are created “as though an affected wit; which, at the same time that it is affected, is also false” (Congreve, 252). He draws his characters from types of people whose behaviors are consistent with their “humour” and who put on affectations which make them funny.

Congreve is sensitive to the real need the audience has for diversion. He is also acutely aware of those in his audience who are bent on exposure and ridicule, regardless of his efforts to avoid this, writes in his epilogue:

Others there are whose malice we’d prevent;
Such who watch plays with scurrilous intent
To mark out who by characters are meant.
And though no perfect likeness they can trace,
Yet each pretends to know the copied face.
These with false glosses feed their own ill nature,

And turn to libel what was meant a satire.
May such malicious fops this fortune find,
To think themselves alone the fools designed;
If any are so arrogantly vain,
To think they singly can support a scene,
And furnish fool enough to entertain. (Congreve, 319)

It is important to Congreve that his audience understands his stated intention to reform the stage by forming a different kind of character. At the same time, he ironically addresses those who will only see what they expect to see, and exposes their false pride in thinking that they could be the basis for his carefully crafted characters.

Richard Steele produces *The Conscious Lovers* at the time when the middle class is coming into power. Influenced by Jeremy Collier's ideas on entertainment, which disparage immorality on the stage, Steele not only tries avoiding imparting immorality in his play; he actively attempts inculcating morality using the good reputations and actions of the protagonist and his father. Sir John Bevil's servant, Humphrey, says of them, "You have ever acted like a good and generous father, and he like an obedient and grateful son," (326) setting the stage in the first act for a story of characters with high moral standards, and an ideal father-son relationship.

The audience finds Bevil Junior repeatedly defending his intention to follow his father's wishes as others question his loyalty. When Humphrey asks him about why he did not disclose his love for Indiana to her, he responds:

My tender obligations to my father have laid so inviolable a restraint on
my conduct that, til I have his consent to speak, I am determined on that subject to
be dumb forever. (Steele, 338)

Humphrey's response that Bevil, Jr. is the "most unfashionable lover in Great Britain" shows further that Steele's hero is truly a remarkable young man in his loyalty to his father. His obedience is even more remarkable because he is not financially dependent on his father. In contrast to the conventional protagonist of this period, whose obedience is the result of a coercive form of familial blackmail, Bevil Junior's obedience stems from a heartfelt sense of honor and loyalty to his father.

Bevil Junior's attitudes and actions concerning the use of his money show yet another moral strength in this young man. When he is conversing with Indiana regarding the use of his money to assist her, he says:

If pleasure be worth purchasing, how great a pleasure is it to him who has
a true taste of life to ease an aching heart, to see the human countenance lighted
up into smiles of joy. (348)

Since it is the habit of young men of wealth to be preoccupied with frivolously squandering their money, Bevil Junior provides a moralistic contrast to characters like Galliard in Aphra Behn's *The Feigned Courtesans*, or Tony in Oliver Goldsmith's *She Stoops to Conquer*, who spend their money on women and drinking.

Steele presents characters that are plainly the virtuous type or the evil type. The fathers are at home and are making the decisions in contrast to earlier plays where the fathers are absent

and the rebellious children are free to do as they wish. Steele puts forth several moral standards as examples of righteous behavior for his audience: honoring one's parents, maintaining a good reputation by one's behavior, respect for persons as persons rather than property, and that in doing the right thing for the right reason, one reaps his or her reward.

The audience now has a moral comedy presented by Steele and characters formed for the discriminating audience presented by Congreve. Congreve's creation of characters that don't rely on buffoonery, ridicule of infirmity, farce, or grotesque exaggeration, tames the stage. This type of comedy is not as funny as what the audience is accustomed to. The absence of illicit sex, licentiousness, obscene language, disobedience of children, and bawdy men and women looking for revelry turn the stage dull. The plays are didactic, with men who are, like Bevil, Jr., obedient to their fathers and chaste, no matter what the cost to themselves. The women are like Indiana who is passive, waiting for her lover to express his love to her without expressing hers to him, trusting his virtue and honor while she sits and waits for things to play out. Those in the audience, presented with sentimentality that encourages them to empathize with Indiana, can no longer laugh at her. Teaching moral truth to youth rather than provide the bawdy licentious entertainment that supposedly contributes to their misbehavior, leaves no place for the sense of carnival or festival spirit.

Comedy by nature wants to disturb the establishment and make it more fluid and vital. Congreve's removal of the raucous, outrageously ridiculous characters, and the internalization of Collier's ideas on entertainment as presented by Steele show how the absence of the comedic elements of the carnival spirit, freedom, illicit and explicit sex, deceit and disguise, outrageously ridiculous characters, and complicated intrigue present the audience with a play that, though it's good for you, isn't funny. This marks the turning point in the death of Romantic comedy as it is here described.

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The Goals of Life: Perspectives from Emergent Adulthood

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Abstract

College students' perceptions of current and future goals and values were assessed across eight domains to determine which goals and values were considered most important. A majority of students emphasized the value of friends and economic success. Cluster analysis was employed to identify four distinctive subgroups of students. These subgroups show a difference in value allocation based on response style or the preferred importance of either economic issues versus creativity and social/ political concerns.

Introduction

Previous research has accessed values of emergent adults several different ways. Values have been investigated in terms of collectivist versus individualistic orientations (Ryckman & Houston, 2003), as they relate to psychological well-being (Kasser & Ryan, 1993; Oishi, Diener, Suh & Lucas, 1999), and in terms of assignment of value to certain life domains (Abowitz & Knox, 2003; Arnett, 2000a; Eskilson & Wiley, 1999). Each of these studies utilized either college students, or subjects who were 17 to 28 years of age, thus making this work applicable to the emergent adulthood stage.

This project will focus primarily on the assignment patterns of values in the emergent adulthood stage. Past research has gauged the subject's presumed importance of certain life areas at some point in the future (Abowitz & Knox, 2003; Arnett, 2000a; Eskilson & Wiley 1999). The emphasis of the importance of personal relationships (family and marital relationship) has often been reported. Arnett (2000a) found that personal relationships were considered most important for future happiness. A warm caring relationship with another adult was one of the most highly rated goals in Eskilson & Wiley's (1999) sample. Economic well-being is also a common goal but is often placed secondary to relationship variables (Arnett, 2000a). Abowitz & Knox's (2003) study of Greek college students replicated these findings, with subjects placing relationship and emotional variables above those that mark material success on importance scales.

Our work has utilized Eskilson and Wiley's (1999) value scale, with the addition that subjects are asked to rate the importance of values over two conditions – the importance to the individual now, and the assumed importance in ten years. Not only will this provide a pattern of values that can be compared to patterns present in past research, but this will allow us to track any expected changes in the emergent adulthood stage. This affords us the opportunity to examine not only a pattern of values, but also its expected stability over time.

Responses will be analyzed not only in terms of what is most important overall to our respondent, but also in terms of how differences in values may make some individuals distinctive. If an overall pattern is established, determining any systematic variations within the group may help to understand how value is assigned within the group. Subgroups may represent real differences in what is valued within the emergent adulthood stage. Our work looks not only

to describe a basic pattern of values unique to Emergent Adulthood, but also to explore any differences in the types of emergent adults, and how they determine what is valued

Methods

Participants

College students (N = 214), attending a large mid-western university answered a questionnaire accessing multiple aspects of the college experience. Participants ranged in age from 18 to 25 years, and 57% were female. Several issues were addressed including: Values and life goals, alcohol consumption, sexual behaviors, and psychological well-being. Subjects also answered questions to gauge the basic demographics of our sample (including age, sex, ethnicity, sexual orientation, affiliation with sorority or fraternity organizations).

Measures

Values. A scale derived from Eskilson and Wiley (1999) assessed values over 8 domains: Friends, Family, Economic Success, Creativity, Significant Other, Social/Political, Spirituality, and Being Supported. The 31 items were rated on a 5 point scale over 2 conditions – importance to the individual now and expected importance ten years from now.

Psychological Well-Being (PANAS-X). Watson & Clark's (1994) PANAS-X scale was used to measure current psychological well-being. Scores were obtained on the following: positive affect (joviality, self assurance, attentiveness), negative affect (fear, hostility, guilt, sadness), and other affective states (shyness, surprise, fatigue, serenity).

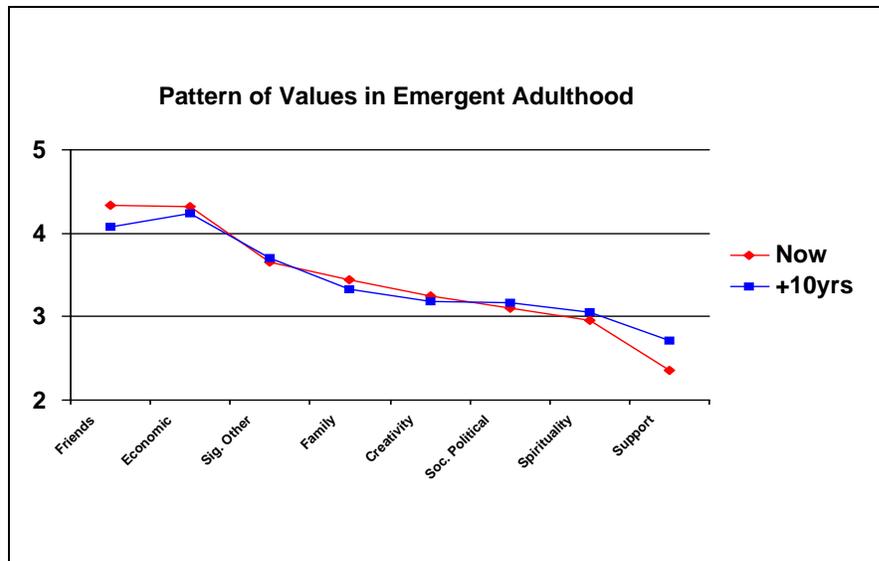
Drinking and Sexual Activity. These behaviors were measured by self-report of participation in specific events. Questions regarding feelings associated with participation, and the setting in which these behaviors occurred were also included.

The data collected was used to explore possible explanations to our basic research questions. The questions are as follows: What values are most important to Emergent Adults? Are there specific patterns of values that can be used to distinguish between members to the Emerging Adulthood Stage? If so, do the members of these separate groups also differ in terms of any other variables other than their values?

Results

Basic Emergent Adult Value Pattern

Value domains could be grouped based on their relative perceived importance to our subjects. Statistical procedures produced 3 domains that were significantly different in their perceived importance. Highly valued domains consisted of Economic Success and Friends. Significant Other, Family, Creativity, Social/Political, and Spirituality were all considered moderately important. Being Supported was the only value considered to have low importance.



Presumed Changes in Values over Time

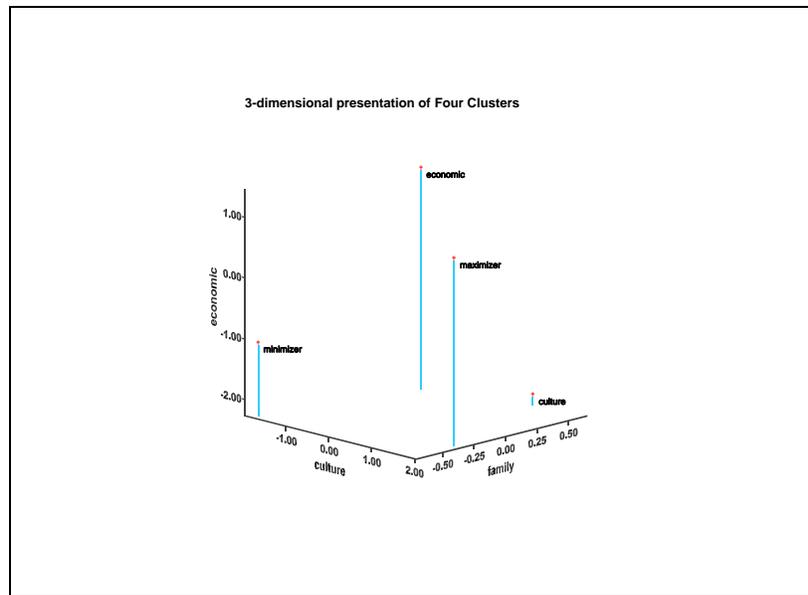
The importance of friends is expected to decrease in ten years (mean score of 4.33 currently and 4.08 in ten yrs.). While the importance of being supported is expected to increase in ten years (mean score of 2.35 currently and 2.71 in 10 yrs.) The differences in values, however, do not effect over all distribution of value scores in relation to each other.

Four Clusters of Values

Cluster analysis was used to determine if students could be characterized not simply in terms of what they valued the most, but by their overall “system of values” and how this might make them distinctive. Four distinct groups were identified that differed either in response style (groups 1 & 2) or in the dynamic importance of either economic success or what we have termed “cultured” factors (groups 3 & 4).

Groups were named based on their overall value pattern. Group 1 (the “Minimizers”) rated the importance of every value low in comparison to all other groups. Group 2 (the “Maximizers”) systematically rated values higher in comparison to other groups. Group 3 (the “Culturally-Minded”) rated the importance of creativity, social or political activism, spirituality and friends as high, while the importance of economic success was rated relatively low. Finally, Group 4 (the “Economically-Minded”) rated economic success and family as high at the expense of creativity, spirituality, and social or political concerns, which were rated relatively low.

In order to explore further the differences among these four groups a discriminant function analysis was conducted. A three-function solution was identified. The first function, labeled *culture*, included scores on Creativity, Spirituality, Socio/Political Activities, and Friends. This function accounted for the most overall variance. The second function, labeled *economics*, included scores on Significant Others and Economic Success. The third function, labeled *family*, included scores on Being Supported and Family.



Tests of Between Cluster Differences

A series of statistical procedures were employed to test differences between the four clusters of students. Chi Square tests of association between group membership and gender, year in college, ethnicity, and involvement in hook-up activities all failed to reveal significant effects. However, a Chi Square test of association between group membership and membership in a Sorority or Fraternity was detected, $\chi^2(3) = 10.87$, $p < .012$, suggesting that Greeks tended to be “Maximizers,” but not “Minimizers” or “Culturally-minded” students.

Between group differences on the PANAS-X psychological well-being measures were assessed through a series of analysis of variance procedures. Although no between group differences were found on the overall negativity score, significant differences were detected with fear [$F(3,206) = 3.68$, $p < .013$] and guilt [$F(3,206) = 2.75$, $p < .044$]. A significant difference was found on the overall positiveness score, $F(3,205) = 3.56$, $p < .015$, but was limited to on the self-assuredness measure, $F(3,203) = 4.30$, $p < .006$. Contrasts with the other four measures of the PANAS-X scale revealed group differences on shyness [$F(3,201) = 2.48$, $p < .063$], and surprise [$F(3,207) = 4.97$, $p < .002$]. With each of these between groups effects comparisons of means revealed that the “Maximizer” group scored higher than the “Economically-minded” group.

A series of analysis of variance procedures were conducted to compare the ratings each of the groups assigned to each value domain in the “now” and “10 years in the future” measures. A significant group*time*variate interaction effect was revealed, $F(21, 609) = 5.03$, $p < .0001$. To de-compose this interaction effect, tests of time and group effects were computed for each value domain. Significant time*group interactions were found with the following: family [$F(3,208) = 30.26$, $p < .0001$], economics [$F(3,208) = 6.48$, $p < .0001$], significant other [$F(3,208) = 3.24$, $p < .023$], creativity [$F(3,208) = 2.63$, $p < .051$], spirituality [$F(3,208) = 2.86$, $p < .038$], and being supported [$F(3,208) = 4.77$, $p < .003$]. An overall time effect was found with the scores for friends [$F(3,208) = 6.51$, $p < .0001$] with all groups showing a decrease in relative importance over time. Neither a time or a time*group effect was found with the social or political activism measure.

Individual Group Characteristics

Minimizers showed negatively polarized scores for all 3 functions (culture, economics, family). The minimizing response style was not found to extend to other scales in the survey. Significant differences from other groups were not evident with PANAS-X scores. Furthermore, Minimizers expect friends to be less important in ten years, while expectations for other value domains remain relatively stable.

Maximizers had positively polarized scores on the culture and economics functions while scores on the family function were neutral. This group's maximizing response style was also extended to PANAS-X scores on certain elements of positive, negative, and other affective states when compared to Group 4. The Maximizers expected the importance of family and economic success to increase in ten years, while the importance of friends was expected to decrease. Maximizer membership also tends to include significantly more people who are affiliated with sororities or fraternities ($p < .012$), with a trend of members who also tend to engage in hookup activity.

Members of the Culturally-minded group showed positively polarized scores on both the culture and family functions, while the scores for the economics function were negative. This group expected a decrease in the importance of friends in ten years, and, although only marginally, an increase in the importance of being supported. The Culturally-minded group were most clearly defined by high levels of importance to traits (creativity, social and political activism, spirituality) which show the most variance between groups, and are also the most stability over time.

The members of the Economically-minded group had negatively polarized score for the culture function, while scores for economics and family functions were positive. They tended to minimize responses on PANAS-X scales when compared to the Maximizers. The Economically-minded group expected the importance of family, friends, and economic success to decrease in ten years. There was also a trend in the data showing that a higher percentage of the members in this group tended to be of White/European descent.

Discussion

The first area of interest deals with the inflated value of Economic Success and Friends reported in our sample. Relationship variables (such as Significant Other or Family) were significantly less important to our sample than was expected. This likely could be due to the composition of our sample (traditional students who attend a highly competitive university that encourages independence and personal accomplishments).

Our work is unique in that participants responded over two conditions – importance now and in ten years. “Friends” was the only variable that all four subgroups expected to be less important in ten years. Past research only gauged future goals and values (Abowitz & Knox, 2003; Arnett, 2000a; Eskilson & Wiley, 1999) without directly assessing perceived change. It is logical to assume that friends will be very important to emerging adults now, and that they may understand this current group will be less important as time goes on. By allowing for two conditions, we were able to gauge values from a fluid perspective, as they are expected to evolve throughout emergent adulthood and into adulthood. Although not a substitute for longitudinal analysis, this provides some indication of what may be happening in the near future.

Cluster analysis allowed us to get a better understanding of not only what is important to emergent adults as a whole, but gave us a glimpse into the differing “systems of values” held

within this group. Even though “culture” issues were only considered to be only moderately important when looking at the value domain as a whole, these items seem to be a key in discriminating between subgroups.

Post hoc procedures to assess the time by group interaction effect revealed that the developmental course of the groups may be quite distinctive. This supports the concept of emergent adulthood as a stage of identity explorations in love, work, and worldviews (Arnett, 2000b) in that different groups of emergent adults anticipate quite different developmental paths, and suggests that further research into the divergent paths through emergent adulthood might become an important research topic in the future.

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Applied Behavior Analysis at C.A.R.E: Children with Autism Reaching Excellence

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Abstract

Autism is a broad spectrum neurobiological disorder. Although there is no cure for autism, it is possible for individuals with autism to achieve a high level of functioning and appear no different from their typically-developing peers if the proper intervention is provided. The only empirically supported treatment for children with autism is applied behavior analysis (ABA) (Green, 1999a). ABA is an early intensive behavioral intervention that has been shown to be effective in reducing problem behaviors and teaching skills that the child shows relative weakness in. To demonstrate the effectiveness of ABA, data was recorded from three children diagnosed with autism who are currently undergoing the early intervention of ABA at C.A.R.E. The frequency of problem behaviors and rate of skill acquisition was recorded from each child. The goal of this study was to show how ABA helps children with autism acquire skills and also to demonstrate that when problem behaviors decrease, skill acquisition tends to increase.

Introduction

Autism

Autistic Disorder is a Pervasive Developmental Disorder characterized by abnormal or impaired development in reciprocal social interaction and communication, a limited range of interests and activities, and stereotypical or repetitive behaviors (American Psychiatric Association, 2000). Autism is “a syndrome of behavioral deficits and excesses that have a neurological basis” (Green, 1996, p. 29). Common deficit behaviors include: a) reciprocal social interaction, b) communication, c) play that is functional, and d) self-help skills (American Psychiatric Association, 2000). Frequent excess behaviors include: a) echolalia, b) self-stimulation, c) self injury, d) aggression and tantrums, and e) obsessive-compulsive characteristics (L.J. Warner, personal communication, 2005). Research has shown that autism is biological in origin, however definite etiologies remain unknown. Autism was once considered to be rare, affecting between 2 and 20 per 10,000 individuals. (American Psychiatric Association, 2000). The current rate of prevalence has increased dramatically, ranging from 1 in 1,000 to 1 in 500 individuals. This increase could be due to changes in diagnostic criteria, an increase in public awareness of autism, or an actual increase in the disorder. (National Institutes of Health, 2001; Volkmar et al., 1994). The typical onset of autistic disorder is prior to age 3 years and is most often diagnosed between the ages of 2 and 3 years (American Psychiatric Association, 2000). Autism is a broad spectrum disorder, indicating that individuals with this diagnosis are affected to varying degrees. Nearly half of all preschool-age children diagnosed with autism are nonverbal (Smith, 1999); however, some individuals diagnosed with autism who receive an early intensive behavioral intervention can become indistinguishable from their typically-developing peers.

Applied Behavior Analysis

Children diagnosed with autism make the biggest gains when an early intensive behavioral intervention (EIBI) such as ABA is implemented. ABA is based upon the principles of operant conditioning which include reinforcement, extinction, shaping, etc. According to Skinner (1953), behaviors are determined by their consequences. A consequence of a behavior that increases the future frequency of that behavior is called a reinforcer, and a consequence of a behavior that decreases the future frequency of that behavior is called a punisher. In other words, behaviors that occur more than once are reinforced somehow.

Research. Currently there are many different therapies available to treat autism. Most of these are “based on flawed theories about the cause of autism, or on untested assumptions about the nature of the disorder...anecdotes and testimonials are the only supporting evidence” (Green, 1999b, p.13). Early intensive behavioral intervention (EIBI), using the principles of applied behavior analysis (ABA), is the only empirically supported effective treatment for children with autistic disorder (Green, 1999a). Research over the past 40 years has proved the efficacy of ABA with children diagnosed with autism. Specifically, ABA has consistently shown to be effective with increasing overall skills and decreasing problem behaviors (autistic symptoms) (Green, 1996; McEachin, Smith, & Lovaas, 1993). Research also suggests that about 1/3 of children who receive EIBI will achieve some level of independence ABA also has also been shown to be successful in mainstreaming children (Green, 1999; Maurice, Green, & Luce, 1996).

A well known study conducted by Lovaas (1987), demonstrates the effectiveness of early intensive behavioral intervention. This study found that 90% of the experimental group made significant improvements on measures of intellectual ability. Of this group, 47% of the children achieved IQs in the “normal” intellectual functioning range after the intervention. In a follow-up study, 42% of the children maintained their gains (McEachin et al., 1993). Another study that proves the effectiveness of early intensive behavioral intervention was conducted by Sheinkopf and Siegel (1998). This study demonstrates the effectiveness of behavioral intervention in a naturalistic setting. Eleven pairs of students diagnosed with autistic disorder or PDD-NOS were assessed in this study. Eleven children who had received treatments by Lovaas et al. (1981) were placed in the experimental condition and were paired with children in the control group. Pairings were based on IQ, gender and diagnosis. Children in the experimental group were found to have significantly higher IQ scores and received lower severity symptom ratings after the intervention than the children in the control group. Also, 5 of the children in the experimental group were placed in a general education classroom.

Teaching methods. One teaching method that ABA uses is discrete trial training (DTT). A discrete trial has a clear start and finish. It starts with an instruction and ends with the delivery of a consequence (Lovaas, 1987). DTT consists of 3 precise components: 1) instruction, 2) response, and 3) consequence. The instruction is given only once by the teacher, and only when the child is attending. Initially, the instruction should be consistent (e.g., wording stays that same). Only after the child has mastered the instruction is it generalized (e.g., wording is different). If the instruction is new to the child, the teacher must immediately use the appropriate prompt to minimize failure and maximize success. As the child gains success with the instruction, the prompts are delayed and should become less intrusive. Eventually, the prompts are faded altogether. The second component of DTT is the response. The response to the instruction is given by the child. The child is expected to respond within seconds of the instruction, either prompted or independently. The response determines what consequence the child will receive. If the response is correct, reinforcement will immediately follow. Such

reinforcement includes a motivational toy or edible (primary reinforcer), as well as social praise (secondary reinforcer). If the correct response is prompted, the teacher reinforces (non-enthusiastically) and represents the instruction to allow an independent opportunity. If the child responds correctly this time, he or she will receive the best reinforcement. If the child responds incorrectly, the teacher ignores the child (does not say anything and does not give eye contact) for 2 seconds and then re-presents the instruction with the appropriate prompt. Basically, skills are broken down into smaller parts. These subskills are taught one by one, and eventually the child will be able to combine all of the subskills that are needed to acquire that overall skill (task analysis) (I. Chong, personal communication, 2005). One common misconception about ABA is that the children who receive the treatment become robotic. The individuals who believe this are often unaware of what takes place after DTT. ABA does not stop with rote learning, but rather continues with systematic generalization of skills across contexts and incidental teaching.

Incidental teaching is another teaching technique that ABA utilizes. Whereas DTT is conducted in a considerably specified and structured environment, incidental teaching occurs in the child's natural environment (e.g., child's home, playground). Incidental teaching is a child-led intervention that helps the child integrate language into everyday life. Basically, the child initiates a request and the teacher/parent asks for more elaboration in the request before the child receives what he/she desires (L.J. Warner, personal communication, 2005). Generalization can be thought of as incidental teaching also. After a skill is mastered in DTT it must be generalized. Generalization should involve multiple people (e.g., family, teachers, peers) and should occur in multiple settings (e.g., school, home, community outings).

As discussed earlier, ABA has shown to be effective in decreasing problem behaviors and increasing overall skill acquisition. To decrease the occurrence of problem behaviors, antecedents that appear to activate the behaviors and consequences that appear to reward (reinforce) the behaviors are altered by the therapist (Smith, 1999). ABA increases overall skill acquisition with the methods of DTT and incidental teaching.

The main purpose of this study was to determine whether:

- 1) ABA does in fact increase skill acquisition and decrease problem behaviors.
- 2) A decrease in problem behaviors facilitates skill acquisition.
- 3) Skill acquisition decreases when problem behaviors increase.

Method

Subjects

For this study, 3 children were chosen from the Children with Autism Reaching Excellence program (C.A.R.E.) to demonstrate the effectiveness of ABA. They were chosen due to their various locations on the autism spectrum, different ages (between 2 and 5 years), and presence of problem behaviors. C.A.R.E. is a center based program where teaching procedures are based on principles of ABA. Children who attend must be between the ages of 2 and 6. The program runs by semesters and consists of 5 days a week, 3 hours a day. The children work one-on-one with a tutor/therapist trained in ABA (many of the tutors are trained college interns). Due to the fact that every child is unique (e.g., skill acquisition, frequency of skill acquisition, problem behaviors), each child has a curriculum that is designed especially for him or her. This is why these 3 children all have different programs.

To protect the confidentiality of these children, their names, gender, and specific ages are not given. As a result, the children are referred to as Child A, B, and C. Data from recent programs, as well as the frequency and type of problem behaviors, were collected for each child.

Basically, programs are either expressive or receptive. Expressive language programs require a verbal response and receptive language programs require some sort of action. Problem behaviors were tallied for each child during every session. Child A is moderately high functioning implying that this child has acquired verbal language however most of this verbal language consists of requests, immediate and delayed echolalia. Child A's curriculum is comprised of a more equal proportion of receptive to expressive language programs than the other two children; therefore, data was collected on one expressive and one receptive language program as well as the occurrence of problem behaviors. Child A's most abundant problem behavior that was tracked during the sessions at C.A.R.E. was aggression (scratching and pinching) toward the therapist. Child B is extremely high functioning. This child verbally communicates with others. This implies that the child's verbal language is not solely limited to requests and echolalia. Child B's current programs consist only of expressive language programs; therefore data was collected from two expressive programs and the occurrence of problem behaviors. This child's problem behaviors consisted of outbursts (e.g., screaming, not willing to sit at the table). They were most likely to occur when a new therapist was assigned to work with this child. Child C is lower functioning and programs include mostly receptive language programs. Currently, this child communicates primarily by gesturing; however, progress is being made with verbal communication. Child C can be instructed to make certain sounds and some motivational words are currently being formed. Problem behaviors include throwing, hitting head, scratching others, and biting self.

Measures

Data was collected from two programs that were selected from each child's curriculum including the occurrence of problem behaviors. Multiple trials were completed for each program every day of therapy. To keep things simple, every trial was marked as either a correct or incorrect response (e.g., for this study, a prompted response was considered an error). After every session the percentage of correct responses for each target in a program was recorded for every session. A program is comprised of a number of exemplars, also known as targets (e.g., different objectives within a program). A program must start with the first exemplar; exemplars may not be skipped. Also, depending on the child and program, 1 to 3 exemplars may be introduced at the same time. The current target must be mastered before a new one is introduced. The criteria for mastery involve the child receiving 100% correct responses for two consecutive days (or sessions). Once an exemplar is mastered it is immediately moved into generalization and maintenance. The exemplar is maintained by reviewing it a couple times a week and it is generalized by having other people administer the instruction, and also delivering the instruction in different settings.

Results

Across all three children (except one program from Child C), data shows that as problem behaviors decrease skill acquisition increases.

Child A

Child A's expressive language program shows that the child mastered exemplars more rapidly when there was a decrease in problem behaviors. The receptive language program shows similar results. Child A's problem behavior did not consistently decrease day by day; however,

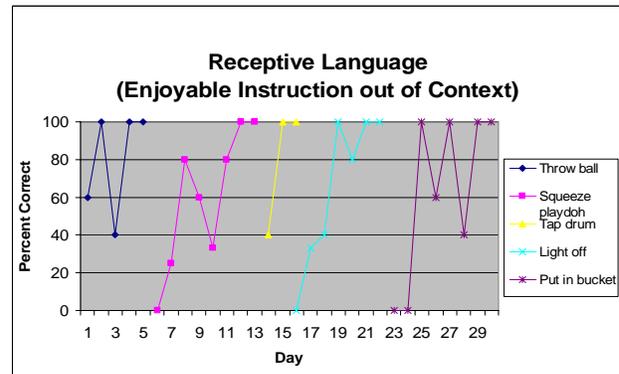
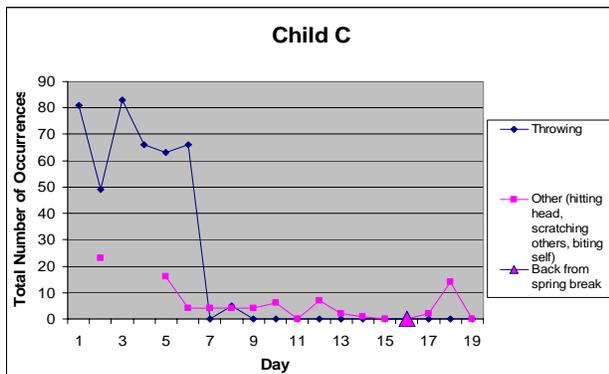
the problem behaviors continued to be tracked and a steady decrease was found in weekly averages. As there was not a constant decrease in problem behaviors, the increase is explained by: the child being ill or tired, a new therapist, child returning from spring break, and termination of medication that was prescribed to reduce stereotypical behaviors.

Child B

Both expressive programs show that skill acquisition increases as problem behaviors decrease. Child B's problem behaviors tended to decrease daily until there was an interruption in consistency such as a change in therapist.

Child C

Data from the two receptive language programs show different results. The "enjoyable instruction out of context" program does show an increase in performance as problem behaviors decrease.



To be specific, on days 1 and 3, the rate of throwing is high while skill acquisition is lower. Also, on day 2 when throwing occurs less often, percent correct for this program is 100%. To take this further, as problem behaviors decline, skill acquisition speeds up. The "following motor action instruction" program does not show the same results. This program shows that when problem behaviors decrease performance does not always increase. Perhaps this result was due to the child's extreme difficulty with understanding the objective and not necessarily due to the frequency of problem behaviors. Problem behaviors that this child exhibited do show a consistent decrease across sessions.

Discussion

Applied behavior analysis as an early and intensive behavioral intervention, for decades, has demonstrated evidence for its efficacy. ABA has consistently shown to be effective with increasing overall skill acquisition and decreasing problem behaviors. The data collected from the three children who attend C.A.R.E. show this trend. As discussed earlier, early intensive behavioral intervention has also shown to be successful in mainstreaming children. Child A has made incredible gains in overall skills since the start of the intervention. This child currently attends a special-ed program at school and hopefully will be mainstreamed in the future. Child B currently attends kindergarten and will move on to first grade next school year! Child C is rather new to the intervention, yet the child's success with skill acquisition is incredible. This child is

not yet in a school program, however, the child is making excellent progress and if the child continues at this same rate there is a good chance he will be placed in at least a special-ed classroom. The children who attend C.A.R.E. demonstrate that every child diagnosed with autism is unique; therefore, each curriculum must be tailor fit to accommodate the child's capabilities. They also demonstrate that ABA is effective with increasing overall skills and decreasing problem behaviors, and in most cases they show that a decrease in problem behaviors results in an increase in skill acquisition.

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Do Academic Performance and Computer Proficiency Correlate?

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Abstract

This study investigated the association between academic performance and computer proficiency. Subjects included 12 elementary education students in a required undergraduate Information Systems Technology class at a medium-sized Midwestern university. On the first day of class, students' computer proficiencies were evaluated with six hands-on tasks ranging from emailing documents to connecting and powering up a computer with all cords and cables removed. Time limits were set for completing tasks, with a separate score for each. Subjects were asked to self-report their current grade point average within four specified ranges as an assessment of previous academic performance. Correlational analyses addressed associations between reported grade point averages and proficiency scores and associations of proficiency scores with final exam scores and course grades. Correlations between the six proficiency scores were also calculated. Results of analyses indicated significant correlations among five of the six proficiency tasks. There was also a significant correlation of the total proficiency score and performance on the hands-on final exam, which also correlated significantly with the course grade. There was, however, no significant correlation between measures of academic performance (self-reported grade point average and final course grade) and proficiencies assessed at the beginning of the course.

Introduction

Many studies have been conducted to predict computer proficiency and academic performance. Most of these studies have focused mainly on academic performance in computer science courses and programming however. Butcher & Muth (1985), for example, found that a strong pretest performance resulted in higher academic achievement. Evans & Simkin (1989) sought to evaluate what best predicts computer proficiency but reported inconclusive results. Katz (2003) identified predictors of achievement in computer science, however, showed that those with early skills maintained an advantage over those beginning without them. Learning and performance were also evaluated by Nilsen (1993), who focused on the association between academic performance and software skills and Nilsen (1993) examined correlations between programming skills and achievement in a computer science course. There are also some studies adopting less technical computer-related measures. Coates (1990), for example, examined the relationship of computer science aptitude and performance, Cates (1992) studied whether computer ownership was related to academic achievement, and Hecht & Dwyer (1993) assessed the influence of participation in computer-related learning both in and out of school on achievement, reporting results indicating that these kinds of activities were related to higher achievement. The purpose of this study is to focus on every day applications of information technology and its impact on academic performance.

Materials and Methods

Computer proficiency tasks in this study relied on six tasks that almost all computer users are faced with each day (see Table 1). All tasks required the use of Macintosh computers and preloaded software that included Microsoft office and a web browser. Subjects were provided a

brief lecture and a handout describing task requirements before beginning work. Tasks were weighted according to the number of steps required as indicated in Table 1. The first task was to physically set up the computer by reconnecting all cables and cords and power up the computer. The second task was to create a folder on the computer desktop. The third task was to locate four individual websites given screen shots of the sites. The fourth task was to see if the user could access and review their university email. The fifth task was to save a computer file in the desktop folder created in task 2 with the appropriate filename extension. The sixth and final task was to send an email with an attachment. Each task had to be completed within the time limit specified in Table 1. Students who did not complete a task were assigned zero points on the task and prompted to move on to the next task.

Results

Since the self-reported grade point measures were categorical ranges rather than interval measures, Spearman's rho was used in all analyses. All tests were two-tailed with $\alpha = .05$. A correlation matrix for all computer proficiency and academic achievement measures is provided in Table 2. Results of this analysis indicate a strong relationship between the course grade and the final exam. The computer proficiency measure also correlated strongly with how well the students performed on the final exam. The lack of a correlation between academic performance and computer proficiency is notable.

Interpretation

All subjects in the study appeared to have good general computer proficiency, demonstrating competence in most basic skill. Those that achieved a significantly higher level of computer proficiency did not demonstrate superior performance in academic achievement, however, suggesting that factors outside of computer use determine how well a student succeeds academically. Moreover, the use of the Macintosh interface in the proficiency tasks did not appear to impact students overall performance despite the fact that nearly all subjects reported primary use of Windows computers suggesting students have developed a level of understanding that allows them to transfer skills across computer platforms. Exactly half of the subjects in the study could create folders on their desktop in the Macintosh environment, using different directions than the Windows environment. Seventy-five percent of the study group could still access and understand email principles, a means of communication for all computer users. This is interesting because normal education does not include social factors of computing that users have already developed. Email and social functions that computers provide are not typically taught as a part of formal instruction, suggesting users may learn independently to support social computer proficiencies.

The correlation between self-reported grade point averages did not show any associations with task proficiencies, suggesting academic achievement does not depend on students' technical skills. Another factor that might explain why the course grade did not correlate significantly with the computer proficiency evaluation was that the final course grade depended not only on technical proficiencies, since students also needed to demonstrate understanding and appropriate application of pedagogical principles. Technical competence in using computers was, therefore, only one element in a broader grading framework. Furthermore, this interpretation is supported by the fact that the final exam a hands-on assessment that emphasized technical competence correlated significantly with the overall proficiency measure. In addition, the final examination

correlated significantly with students' course grades, suggesting that a more technical course orientation (like that in the studies cited at the beginning of the paper) probably would have resulted in a significant proficiency-grade correlation.

Conclusion

Results of this study, while not conclusive, are consistent with previous empirical work linking technical proficiency with increased academic performance in a technical domain (i.e., computer science). Perhaps most interesting, the absence of significant correlations between technical proficiencies and achievement in a non-technical domain (teacher education) suggests that the integration of technology proficiencies within learning environments that emphasize application to the specific learning domain may be very important. Ultimately, it appears that academic performance and computer proficiencies are not related in a simple fashion and educators should not assume that simply because technical proficiencies have been mastered, students will know how to apply those proficiencies in practical domain-specific settings.

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From Stubborn to Sophisticated, “In Number More Than Ever Women Spoke”: Leon Rubin’s Portrayal of Hermia’s Process of Maturation in A Midsummer Night’s Dream

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Whiny child. Defiant teenager. Savage-like girl. Sophisticated woman. These are just a few words that describe director Leon Rubin’s portrayal of Hermia in William Shakespeare’s, A Midsummer Night’s Dream, throughout her maturation process. Rubin uses clothing, body language and blocking, tone of voice, and various dimensions of the character to demonstrate Hermia’s rebellious ways, and to demonstrate her slow process of maturation into an obedient, young woman. Hermia has previously been portrayed as a poor, sweet young girl who is at the mercy of her father’s evil decision-making, concerning her choice of love. However, Rubin portrayed Hermia as a “snotty” teenager who whines, and demands to get her way. She is in no way inferior to anyone. In fact, Rubin portrays Hermia as a snob who feels as though she is above everyone, and will get her way no matter what her authority decides. Rubin’s portrayal of Hermia challenges the previous representations of her character in the past. For, Rubin demonstrates Hermia as “whiny” teenager who morphs into a mature woman, who quietly takes her place into her structured society. Rubin steers clear of the previous representations of Hermia as a sad, and abused young girl who is demeaned by her father, or as a strong woman who is held back by her cruel society. Rubin’s representation of Hermia as a cocoon that morphs into a butterfly, silent yet beautiful, is a definite contrast to previous interpretations of the play. Hermia’s initial appearance in the play is a foreshadowing of her “sulky” and defiant ways which will be her stepping-stone from her “bratty” teenager persona to her final maturation into a sophisticated woman. She dressed seductively, acted in a defiant way, spoke in a defiant tone, and demonstrated herself to be immature and lacking sophistication in her conservative society. Rubin’s decisions to change Hermia’s clothing from seductive, to tattered and worn, to classy and sophisticated, demonstrated Hermia’s coming of age, and her realization of her place as a silent woman in a male-dominated society. Also, Hermia’s transition in her tone of voice toward her father and other authority figures, versus her sweet tone toward Lysander, showed her personality as a strong woman, versus a needy, young girl. Lastly, Hermia’s actions and her body language in the woods, versus her actions in her conservative society, also demonstrated her shedding of the “bratty” exterior, and the beginning of her maturation process into a sophisticated woman. Hermia’s character also had four different dimensions, which is represented by her four major stepping-stones to her destined maturation into a woman.

Hermia’s clothing goes through many transitions throughout the duration of the play. First, in Act 1, scene 1, as she enters the stage with a pout to her lips, her clothes are seductive, inviting, and flashy. Her brown hair is half up and half down, showing that she is attempting to be conservative, but the stubborn child within her keeps the rest of her hair swinging loosely about her shoulders. She is making a statement about her disagreement with her society; she will not obey. The direction Rubin takes on Hermia’s clothing mimics that of a Catholic schoolgirl who instead of wearing her uniform, dresses in an inappropriate short skirt, just to spite the structured system of rules. Upon entering the stage in Act 1, scene 1, Hermia initially wore a low cut, midriff, black tank top, and a short, white skirt with a large slit on one side. She also wore

black high heels, and a gold, shiny chain belt. Rubin's use of the black and white theme of Hermia's clothing demonstrates Hermia's transitions from frumpy, defiant teenager, black, to stunning, sophisticated woman, white. Also, of all the characters, Hermia was the only character to wear an accessory with her dress. She wore a shiny, gold, chain belt. This shows that Hermia must stand out and be noticed; the center of attention. It also provides her with a spark that she brings to the plays conservative society. Her gold chain helps Rubin's view about Hermia being held back, emotionally, by her conservative society. For, the chain represents being bound, as Hermia is bound by her father's decisions. However, chains can, and will be broken. The next major dressing change is in the forest as Hermia and Lysander begin their journey to escape the Athenian rules. Rubin dresses Hermia in a long, white, virginal dress. This dress may demonstrate the innocent side of Hermia that she has hidden under her seductive exterior. Also, Rubin could have been using the white dress to symbolize her ignorance to her upcoming maturation. She is also a virgin to love's trials, due to her lack of maturity, and her little girl persona. As the play progresses, her long and white dress becomes worn and tattered. Rubin's use of holes and tears in the dress demonstrate Hermia's shedding of her former immature self, en route to her eventual womanhood. Rubin also places ivy, or vines, about her wrist and ankle, and places a necklace of ivy around her neck. Rubin is showing Hermia's welcome into the forest, and dressing her in the décor of the "savages". It also demonstrates the "shackles," or weight, from her awaiting society that she will be rejoining with her new wings as an adult woman. Lastly, in Act 5, while the lovers accompany Hippolyta and Theseus into their palace, Hermia is dressed in a sophisticated, flowing gown. The gown is tan; a neutral color emphasizing her now neutral attitude to her rigid society. Her hair is also all up from her shoulders, and placed into a tight bun on top of her head. Rubin is showing how Hermia's child-like tendencies are wrapped up into her hair, and is hidden from the rest of society. She is no longer a wild savage. She is now a refined woman, who has taken her place into society. In addition to clothing changes, Rubin also used tone of voice to demonstrate Hermia's transitions from rebellious child to mature woman.

Hermia's personality was also shown through her tone of voice toward her authority figure versus her tone toward Lysander. First in Act 1, scene 1, as she outwardly defies Theseus regarding her father's choice of Demetrius, her tone of voice toward Theseus is strong, yet whiny. Hermia's tone demonstrates her will to get her way. Also, she does not speak to her father directly; she speaks to her father through Theseus, for, she speaks only to Theseus. Thus, Rubin is showing Hermia's anger at her father's decision, therefore she is ignoring her father as if his say never existed. Rubin's choice of wording for Hermia, as well as her tone, also shows Hermia's intentions to get her way. After Theseus tells Hermia that Demetrius is a decent gentleman, she whines, "So is Lysander," (1.1.54). This line demonstrates that, to Hermia, Lysander is the only thing on her mind, and she will attempt anything to get her way to be with him. Also, she is desperate to get her father to agree and allow her to get her way. "I would my father looked but with my eyes," (1.1.58). She says this statement with a tone of voice resembling a child who wants their parents to buy them a toy. Rubin also shows Hermia's immaturity through her defiant tone toward Theseus, "I do entreat your grace to pardon me. I know not by what power I am made bold, nor how it may concern my modesty," (1.1.60-2). This line by Hermia shows Rubin's demonstration of Hermia as a brat who is trying everything to be allowed to do what she wants. Rubin is also demonstrating Hermia's lack of acknowledgement to the rules of society that women are to follow. She knows what is expected of her as a woman, but she refuses to obey them, much like a defiant child. Next, at the end of Act 1, scene 1, when

everyone leaves the stage, and she runs to Lysander's side, her voice mimics that of a whiny young girl, infatuated with her lover. She becomes clingy and her voice softens, as she looks up at him, "Then let us teach our trial patience, because it is a customary cross," (1.1.154-5). Rubin is demonstrating how Hermia is acting like a child who is denied a toy, and states, "But, I want it!" Next, when Lysander speaks of her father's choice of Demetrius, her voice becomes hard and stubborn once again, "O hell! To choose love by another's eyes," (1.1.142). Then, yet again, Lysander speaks of their love and elopement, and Hermia's tone once again gets soft and loving, "My good Lysander, I swear to thee, by Cupid's strongest bow," (1.1.170-1). Rubin is showing how Hermia is immature and fickle in her actions. Rubin is also demonstrating Hermia to be chaotic, and a needy young girl, who is angry with her father, but in love with getting her way.

Rubin also portrays Hermia's immaturity through her tone of voice toward the other lovers, Helena and Demetrius. When Helena enters the scene at the end of Act 1, scene 1, and Hermia and Lysander tell Helena of their elopement, Hermia's tone becomes condescending toward Helena. Rubin's portrait of Hermia is shown through her tone, which is as if she is mocking Helena's lack of love, and promoting her own situation with two men chasing after her. "I frown upon him, yet he loves me still," (1.1.196). Yet again, Rubin is demonstrating Hermia's immature mind, and laughable tone of voice toward Helena. Hermia mocks Helena again as she tells of she and Lysander's plot to flee the laws of Athens, "Take comfort: he nor more shall see my face; Lysander and myself will fly this place," (1.1.205-6). Her tone of voice, as she said this line, was an "I told you so" type of tone. Thus, mimicking that of a young girl's tone while talking about her crush's interest in her. Next, in Act 3, scene 2, when Hermia is chastising Demetrius for "killing Lysander," Hermia becomes angry once again toward Demetrius as she questions where Lysander went, "Now, I but chide, but I should use thee worse, for thou, I fear, hast give me cause to curse," (3.2.45-6). Hermia only becomes angry when she feels as though Demetrius has hurt him. Rubin had Hermia's tone, during this line, change to a harsh and brutal tone that makes one shiver. Thus, once again showing her reliance on Lysander's presence for her happiness. Hermia's tone of voice goes through many changes throughout the play. Her tone toward her authority is strong, yet whiny. Her tone toward Lysander is soft and needy with love. Her tone toward Helena is condescending, and her tone of voice toward Demetrius is full of anger and hatred. Through tone of voice, Rubin is showing Hermia's defiance, immaturity, and neediness. Her tone of voice also sets a second stepping-stone for her eventual maturation into a woman.

In addition to changes in her tone of voice, Hermia, as the play progresses, speaks less and less. In Act 1, Hermia speaks a considerable amount to Theseus and Lysander. She speaks to Theseus in an attempt to sway him from his position to follow Athenian law, "But I beseech your Grace, that I may know the worst that may befall me in this case, if I refuse to wed Demetrius," (1.1.64-6). As for Lysander, she speaks to him about their love, "If then true lovers have been ever crossed, it stands as an edict in destiny," (1.1.152-3). Then in Act 2, Hermia only speaks to Lysander, and her lines are limited. The two lovers converse as they attempt to sleep in the forest; Hermia wishes for Lysander to sleep away from her, "Nay, good Lysander; for my sake, my dear, lie further off yet, do not lie so near," (2.2.45-6). In Act 3, Hermia speaks a bit, but is mainly attempting to calm Lysander and Demetrius, and prevent them from fighting each other. She is also questioning Lysander's change of heart, and warding off Helena's accusing words, "Little again? Nothing but low and little? Why will you suffer her to flout me this?" (3.2.332-3). Then, in Act 4, Hermia has only two lines, and they are both short. Both answers refer to the quick invasion by Hermia's father, Theseus, and Hippolyta. Demetrius asks is the Duke had just

entered the woods, and spoke to them, and Hermia's answer is short and quick, "Yea, and my father," (4.1.201). Lastly, in Act 5, Hermia never speaks to anyone, solely. The only time she speaks is when the lover's are in Theseus' palace, and all the lovers answer Theseus' questions in unison. Also, Hermia whispers to Lysander as they stand and speak to Theseus about which play they will watch. She also whispers to Helena, once they all have seated to watch the mechanical's play. Both times Hermia whispers, the audience cannot hear what is being said. By the end of the play, Hermia becomes a mute. Thus, Rubin is demonstrating her gradual acceptance of a woman's role in her conservative society, as to follow through with the rule of "women are to be seen and not heard."

Hermia's body language and blocking also show her gradual decline in defiance. First, in Act 1, scene 1, Hermia entered the stage with her arms crossed. Rubin also placed her far across the stage from her father. She was downstage and her father was upstage. Thus, Rubin is showing the audience that Hermia is acting like a child that has just been reprimanded for stealing the last cookie from the jar. This shows her disobedience toward her father and society. Also, her stance signified that she knew she was being a stubborn, but did not care. She wants her way! Hermia also stepped toward her father whenever she spoke her mind, showing that she was challenging him, and not going to budge from her position in the argument of which man she desires to date. Also, Hermia never addresses her father, as if ignoring his presence; she instead speaks to her father through her conversation with Theseus. Although she spoke only to Theseus, she continued to look at her father, outwardly defying him, and not giving a concern as to how she looked to society. Rubin is providing the audience with a clear view of Hermia's defiance and anger at her father, and to her society. Throughout much of Scene 1, Hermia continues to stand alone. It is not until Hippolyta moves from her position to stand behind Hermia, holding her shoulders, that Hermia gets comfort during her argument with Lysander. The only time Hermia makes an attempt to remove her crossed arms from her chest is when Hippolyta holds her shoulders. Hermia then uncrosses her arms just a little, and holds onto Hippolyta's hands. Rubin is showing the audience that although Hermia acts as one who does not need anyone's help, she really is an insecure young girl. Thus, she welcomes Hippolyta's support and comfort. At the end of Scene 1, Rubin portrays Hermia's frustration by having her face away from everyone on the stage, and face the audience. Rubin is demonstrating her displeasure with Theseus' and her father's decisions about her life with Demetrius. She will not acknowledge their decisions, and is ignoring their presence, as a child who does not want to listen to their parent. Next, at the end of Act 1, Scene 1, Hermia fully faces Lysander as she speaks to him, "Belike for want of rain, which I could well beteem them from the tempest of eyes," (1.1.132-3). Rubin is demonstrating her decision to fully give her all to Lysander, the man in her life. Then, in Act 3, while Hermia is chastising Demetrius, she is chasing after him as she yells at him, "If thou hast slain Lysander in his sleep, being o'er shoes in blood, plunge in the deep, and kill me too," (3.2.47-9). She also points at him accusingly, and pushes him a few times. Rubin is showing Hermia's fight for Lysander, and her determination to get he way. The most prominent of Hermia's actions was also in Act 3, scene 2. While Hermia is arguing with Helena, she jumps up on the top of her toes as she speaks, mimicking Helena's description of Hermia as a puppet, "How low am I? I am not yet so low but that my nails can reach unto thine eyes," (3.2.302-3). She also lashes out at Helena, while clawing at her with her nails. This shows the savagery of the forest versus the conservative society that is waiting for the return of Hermia. Rubin is also showing Hermia's actions of attempting to break away from inner self. She is clawing at the air as if she is reaching for something more than just Helena; her true identity. Rubin is

demonstrating her clawing for a place in her society, but by her own means with Lysander. Lastly, in Act 5, while at the palace of Theseus, Hermia stands in front of Lysander as he holds her from behind. She is welcoming the control of society, and allowing Lysander to control her. She also turns around, faces Lysander, and gets on the top of her toes as Lysander kisses her forehead. Therefore, she is submitting herself to the woman's role of being a mere 'puppet' on a string. Hermia also holds her tongue through the duration of Act 5. Then, once the couples sit down and watch the mechanical's play, she faces her body toward Lysander, but then she turns herself toward Helena. Rubin is demonstrating Hermia's compliance with the laws of society, but she also has her stubbornness hidden within herself. Rubin also portrays Hermia's maturity, yet hidden teenager ways, at the end of scene 5, when the lovers, Hippolyta, Theseus, and the mechanicals dance. Although she is the first to sway to the music, and be bold with her dancing, she also goes to Demetrius and dances with him. Thus, Rubin is showing that although she has her old ways intact, she is also a mature woman who can handle dealing with a man that used to chase her, and not brag about it or carry on immaturely.

There are four dimensions to Hermia's character, just as there are four major changes that she goes through. The first dimension of her character is shown through her actions toward her authority. Hermia is defiant and stubborn toward Theseus and Egeus. Her tone of voice is hard and a little "whiny," and she makes it clear that she will not be swayed from her choice of Lysander, through her tightly crossed arms. Rubin portrays Hermia with an adamant stance, arms crossed, and her feet apart as if she is planted like a tree in her position. Her head is tilted up, as if her attempts to look at the sky will make the "wrong" decisions of her father go away. Her responses to her authority are also sharp and defiant, "So is Lysander," (1.1.54). Her second dimension is shown through her actions toward Lysander. She morphs into a silly girl when Lysander enters the scene. She acts giggly and laughs, and hangs on every word she says to him. She is continually touching him, and reaching for him, as if she is making sure he is always there. Rubin has her also speak as a silly schoolgirl with a crush would speak, "Tomorrow truly I will meet thee," (1.1.180). The third dimension of her character is shown through her actions toward Helena and Demetrius. When she is addressing Helena, she acts superior. She becomes condescending and talks down to Helena, as if Helena would never be able to compete with her looks and position. She also speaks down to Helena, as if she is speaking to a child, "His folly, Helena, is no fault of mine," (1.1.203). Also, while conversing with Demetrius, she is showing her anger and disgust with him for disrupting her plans with Lysander, "Henceforth be never numbered among men," (3.2.68). Lastly, her character's fourth dimension is shown through the battle within herself. Hermia is battling her own demons. For, behind her tough exterior, and soft words to Lysander, she is really insecure and unsure of herself; she is trapped between definitions of herself. This is shown through her desperate pleas to Demetrius, her clingy actions toward Lysander, and her offensive reaction toward Helena when she calls Hermia a 'puppet.' Despite battling her society, and her love life, she is also battling herself. Thus, the major changes of Hermia range from teenager to womanhood. First, she is defiant, in society, "So is Lysander," (1.1.54). Then, she becomes "clingy" and "whiny," in her society and in the forest, "Help me, Lysander, help me!" Do thy best to pluck this crawling serpent from my breast!" (2.2.148-50). Next, she becomes wild and angry, in the forest, "How low am I? I am not yet so low but that my nails can reach unto thine eyes," (3.2.302-3). Lastly, she becomes mature and sophisticated, and does not speak; thus, completing her journey from flamboyant teenager to a silent, sophisticated woman. She finally comes to terms with her own immature dimensions, and submits herself to her society's expected role of women. Through these dimensions, and changes

in Hermia's character, Rubin is demonstrating how Hermia finally enters the realm of maturity in her society, and silently submits herself to the expected "womanly role" that her society promotes.

Rubin's portrayal of Hermia is opposite to that of past representations of her character, yet it is more modern. Rubin portrayed Hermia as an immature teenager whose romp in the woods makes her realize her place in her society, and turns her into a mature, sophisticated young woman. Hermia's transformation was obvious throughout the play through her dress, tone of voice, actions, and representation of her character's persona. After watching the play, Rubin's portrayal of Hermia made the realization of Shakespeare's intentions quite clear. Shakespeare used his characters, in his many plays, to portray his feelings in regards to the politics of society. Women were not "puppets," or mindless to Shakespeare, they were intelligent and witty; they were equals. This view is shown through Rubin's accurate depiction of Hermia as a prominent character that went through a prominent transformation, and cut through the "vines" of the forest to emerge as a beautiful, obedient butterfly morphed from a rebellious "bad egg."

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Captive Breeding: The Survival and Maintenance of Endangered Species with a Focus on the Cheetah

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I. Introduction

“Human beings are the most adaptable creatures that have ever lived on Earth. Reason and insight, the chief human talents, have given us the power to forge a world increasingly fit for our own comfort. We feed voraciously on all other matter of life, from whale to lily. We have no significant predators save a diminishing roster of infectious diseases. Of course, there is also the odd shark, crocodile, or lion, but they are disappearing even faster than the diseases. We carve the planet’s surface into fields and streets, shopping malls and parking lots, with little regard to what was there before, because what we replace it with offers a more immediate, short-term benefit. Never before in Earth’s history has such an abundant, aggressive, industrious omnivore at the peak of the energy pyramid compromised such a large portion of the living biomass. The prognosis is clear for the five to ten million other kinds of living things that share the Earth. They are in big trouble” (Kaufman and Mallory, 1993 p. 1).

II. Endangered Species

A. Organizations for Endangered Species

More than nine hundred plants and animals in the United States are critically endangered. An endangered species is one in which the population is in danger of disappearing from all or some of the locations in which it currently exists. When a species has not been seen for more than fifty years it is considered to be extinct. Species which are not endangered but may soon become endangered are regarded as a threatened species. Many endangered populations contain fewer than a few dozen individuals (Tobias 1998, p. 4). There are two main organizations that are involved with the management and protection of endangered species, the International Union for the Protection of Nature/World Conservation Union (IUCN) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

B. Causes for Endangerment

Species become endangered as a result of many things; most of these causes are human inflicted. Many efforts are now being taken to try to correct the past mistakes and to lessen the odds of species becoming endangered or extinct. The biggest cause of endangerment is habitat destruction. Our planet is constantly changing, natural changes usually occur over a long period of time in which the species can adapt but when fast paced changes occur most species have trouble adapting. Habitat destruction occurs when humans cut down or destroy forests, it can also occur due to global climate change which can result in a loss of essential nutrients from the soils. Deforestation is a good example of habitat destruction. In the United States only five percent of the original forests are still present. Pollution may also be a cause of habitat destruction for some species (Kurpis, 2002).

Introduction of exotic species can also have an impact on native species. Exotic species can disrupt the ecological balance of an environment, in addition to causing greater competition for food; sometimes these exotic species can even become a predator for some species. Most exotic species do not have a natural predator and thus can take over an ecological area very rapidly (Kurpis, 2002).

Over exploitation of a species by humans can be a cause for endangerment for some

species. There is a large trade in wildlife for dead or alive species as well as their body parts; this has caused some species to become endangered or even extinct. Although there are now stricter regulations on the wildlife trade, illegal trades are still going on. Such illegal trades include poaching for animal tusks or horns (Kurpis, 2002).

Diseases are another cause of endangerment; such diseases are distemper virus or the rabies virus. These viruses can wipe out entire populations if everyone is exposed. East Africa's carnivore population is currently being affected by these viruses. Most species do not have a natural genetic form of protection to fight off these pathogens (Kurpis, 2002).

III. Captive Breeding

A. Basic Information- In the Zoo

In order for captive breeding to be successful a realistic environment for the species must exist. A zoo is usually the best place for this to occur. Zoos provide support for endangered species by breeding animals in captivity to prevent them from going extinct. The zoos can also provide populations of animals that may be re-released into their natural environment. Many zoos are already participating in captive breeding programs. The Species Survival Plan (SSP) is one of the leading programs used for saving threatened or endangered species. The SSP is designed to help some of the world's most critically endangered wildlife. It was started by the American Zoo and Aquarium Association (AZA) in 1981. The SSP uses captive breeding as one of its chief functions for species survival. Over 100 species are currently in the SSP programs at more than 160 zoos and aquaria in North America; this includes the Detroit Zoo which contains 35 species under the SSP (Detroit Zoo, SSP 2005).

The ultimate hope for survival in the zoo is for a temporary recovery of endangered species and ultimately a return to the wild. Not all attempts made in the zoo have been successful, and the cost is very expensive. Zookeepers must sort out the details of feeding and habitat for each species, and then figure out the ability of these animals to breed. In order for this to be accomplished zookeepers and curators must research and develop ways to simulate the species natural habitats to increase the likelihood of successful breeding. Often during time of drought, famine or other times of high stress, many animals will just simply forget the whole matter of reproduction and focus on what it considers the more important issues at the time. In addition, many species have specific rituals or criteria before they will breed. Most species require some male rivalry in order to mate; this is sometimes a problem because many zoos cannot afford to keep more than one male of each species. Sometimes breeding will not occur even after all the proper preparations and precautions have been made, sometimes the male and female for whatever reason do not successfully try to reproduce (Tudge 1992 p.57).

B. Benefits of Using Captive Breeding

In addition to species preservation, captive breeding serves many other important functions. Captive breeding programs in zoos and aquaria are capable of increasing the number of offspring each species contributes to the next generation, which increases the ability to contribute ones genes to the next generation, thus preserving the diversity of each species (Kaufman, 1993 p. 155). Keeping animals in captivity allows a gain of knowledge about that species including behavioral and breeding ritual details. Captive breeding allows humans to control the breeding population sizes of animals in captivity and it usually results in increased reproduction rates for most species. Most importantly captive breeding allows for research and science education for zookeepers allowing them to learn more about the natural habitats of each species and how to equip for future advances in science and protection of potential endangered species.

C. Concerns with Using Captive Breeding

Many concerns arise when dealing with an endangered species, particularly when placing that species into captivity for breeding. One problem is that small populations are considered a genetic 'bottleneck', a loss of genetic diversity in small populations, which accordingly leads to a decreased ability to adapt to environmental changes (Bryant, 2002 p.2-3). This is especially evident within the cheetah population in which all the individual species are considered to be threatened or endangered. Consequently, many of the sperm cells of these species have appeared to be abnormal, which consequently caused a decrease in the ability for adaptation to environmental changes (SNZP, Smithsonian).

The cheetah has one of the lowest levels of genetic variation in all mammals; this is perhaps caused by inbreeding which is another concern that occurs with small populations of mammals (SNZP, Smithsonian). Inbreeding usually takes place in animal populations that fall below fifty breeding animals in a particular area. This causes the animals to breed with close relatives who have similar genes. As a result, the offspring have been found to have decreased fertility levels, birth and genetic defects, and increased mortality rates (Bryant, 2002 p.2-3). The cheetah has been found to have a very high juvenile mortality rate in both inbred and non inbred offspring; this may be due to genetically similar unrelated parents, which is another cause of low genetic diversity. Inbreeding is becoming a very big concern for captive breeding because it can lead to severe genetic deterioration that may cause the population to go extinct without a chance of recovery (SNZP, Smithsonian).

Hybridization occurs when one species mates with a different species causing a hybrid offspring and has become a major concern because hybrids cannot be covered under the Endangered Species Act. Researchers have argued that hybridization would destroy the integrity of the species. There are currently cases being studied on hybrids of similar subspecies and whether they should be protected by the act (Bryant, 2002 p.4). Hybridization can also cause certain gene traits to be left out while allowing others to be favored; some of these genes may never be able to return to the gene pool.

Selective breeding is also a concern for captivity bred animals. Animals in captivity seem to selectively breed for those traits that benefit captivity rather than those that benefit the wild. Selective breeding is causing animals to gradually become domesticated and become more dependent on humans as caretakers. Also, selective breeding is causing animals to ignore predators and not be aware of the dangers that their surroundings may exhibit. Animals that breed well in captivity are not necessarily good breeders in the wild. For example, producing small litters in the wild may be more beneficial to increase the survival of each individual, but in captivity producing large litters may be more beneficial (Tudge, 1992 p. 128).

Finally, animals kept in captivity may suffer from a wide range of physical problems despite the tremendous advances in the veterinary care of exotic animals. In addition to veterinary care, veterinarians are researching artificial insemination and embryo transfer (Tongren 1985, p. 149-163).

IV. Reintroduction

A. Basic Information- Case Studies

The primary purpose of captive breeding of endangered species is to eventually reach a thriving animal population in the wild. This is achieved by reintroducing and releasing the captivity bred animals to the wild. This can be very difficult to accomplish but once achieved it can be very beneficial to the species population. Nineteen separate species have been

reintroduced to the wild, seven of which were completely extinct in the wild at the time of reintroduction. Some of these species are the Pere David's deer, Arabian Oryx, American Bison, Red wolf, and the Guam Kingfisher. The Pere David's deer from china was extinct from the wild in 1122 for approximately 800 years before it was reintroduced. The Arabian Oryx was labeled extinct in 1972 but has since been reintroduced due to captive breeding in the Phoenix and San Diego zoos. The Red Wolf was almost completely extinct by 1970 with a population of only 14, but with captive breeding and reintroduction the population has now reached over 240 individuals (Bryant, 2002 p.11-19).

B. What needs to be taught?

Animals must learn a variety of fundamental skills in order to survive. They must learn how to hunt and forage or where particular trees grow. When in the wild the young are taught these skills by their mothers. However in captivity, the learning process is different. Zookeepers hope that with time the offspring of those reintroduced will learn the necessary skills and that each generation after that will be better adapted than the previous and at some point the species may reach the same level of knowledge as their once non-extinct ancestors.

Dr. Hilary Box outlined the five steps that each animal must be taught before being reintroduced into the wild. These steps are orientation, feeding, places to rest, relationships between species, and relationships within species.

Orientation involves teaching the animal how to move about and the shape and weight of its own body. Tree animals must learn to trust their body weight when climbing a tree and also how the tree branches will react when stepped on. Orientation is usually taught by using an island type of enclosure, to mimic the natural environment of the species, rather than a cage.

Feeding is another attribute that a species must learn before reentering the wild. This involves teaching the animal how to find and catch food. They must also learn what a safe food source is and what is not. Feeding can be taught by forcing the species to catch and find their prey or even to climb the trees themselves to get the plants. This is much more beneficial than simply putting out a food bowl. At Glasgow Zoo, keepers have tried a variety of techniques for feeding cheetahs. Originally it was found that throwing the food over the fence of the enclosure was helping the cheetahs feel as if they were capturing their food. However, if the food would touch the ground before the cheetah caught the food in the air the food would go uneaten. Cheetahs do not have a good sense of smell or good nearsighted vision; cheetahs see movements from a distance and hence can catch a flying piece of meat but not see it lying in front of them. Ultimately zookeepers found that incorporating games into feeding times were benefiting the animals greatly. Zoo keepers would hang the food from ropes or the ceiling in difficult locations to reach and also the food would be put in different places each feeding time. This allows the animals a sense of hunting in addition to problem solving (Tudge 1992 p. 223-224).

All species need a resting place, mammals as well as rodents and birds all build nests for resting and sleeping. Animals in complex environments must learn the safe places to rest which are out of the reach of predators. Most animals will learn this skill on their own if given the right kind of environment. Most mothers will build a nest for her young instinctively, without training.

Animals must also learn what kind of relationships they are to have with other species, especially when dealing with predators and prey. In captivity, species are not exposed to many predators so they must be taught who to avoid in the wild. Captive bred animals that are too tame are easily hunted. Captive bred animals also need to learn that it is not in their best interest to have close contact with humans. One example was a cheetah that was released from De Wildt and injured because it chased a motor-cyclist. Another cheetah was found on farm land against

the farmers will. Furthermore, each animal must learn how to react with members of its own species. Such actions are mating, fighting, and protection of oneself and young (Tudge, 1992 p. 233-240).

V. Case Study: The Cheetah

A. Basic Information

The cheetah is the fastest known land animal reaching speeds of up to 75 miles per hour. The cheetah can go from zero to fifty miles per hour in 2.5 seconds. The cheetah has many adaptations designed for swift running. Some of these adaptations are; a small head, long legs, a flexible spine, a laterally flattened tail, enlarged internal organs, and semi-retractable claws with rough foot pads to help with traction. The cheetah is found in many habitats but mainly in the savannah, it is found in several countries in Africa but primarily in Namibia (Africat, Conservation).

Cheetah's normally feed on antelope, hares, and other small to medium sized mammals. They hunt and chase their prey and upon capturing they clamp down on the throat of the prey cutting off the oxygen supply, consequently killing the mammal (africat.org).

The cheetah is sexually mature around two years of age and has a gestation period of approximately 95 days with a litter size of one to six. These young cubs are defenseless against prey and are often killed by larger carnivores such as hyenas and lions. The cubs are completely dependent on their mothers until about 18 months of age. In this time, the mother teaches the young cubs to hunt and survive on their own. (Eaton, 1974 p. 16-25).

B. Causes for Endangerment

“The cheetah, fastest of the world’s land animals, is racing towards extinction. One or another of man’s desires have harassed many species into oblivion, but the cheetah is getting what seems to be special extermination treatment. It is being trapped for its value alive, shot for the value of its fur, poisoned because it supposedly kills livestock, occasionally hunted for “sport,” made homeless through the loss of its habitat, and starved through the loss of its prey’s habitat” (Eaton, 1974 p. 156).

The expanding of the human population is causing a decrease in the cheetah population. The cheetah needs a large area of land to survive, but with an increasing human population the cheetah’s natural habitat is being taken up. Loss of genetic variation is also causing the remaining cheetahs to die off. The cheetah tends to have little genetic variation between each individual. This is occurring as a result of the genetic ‘bottleneck’ of the remaining cheetahs. In addition to captive breeding, educating people about the importance of the cheetah and its conservation are the most significant factors that can be addressed to help revive the cheetah population.

C. Captive Breeding

The cheetah is one of the most difficult species to breed under captivity and because of this; captive breeding efforts have rarely been successful. Fortunately, increased education programs and breeding facilities have improved the knowledge and likelihood of successful breeding. Approximately 200 facilities in the world hold around 1400 cheetahs in captivity. The Smithsonian National Zoo has been involved in 25 years of research involving cheetahs in the zoo and in the wild. On November 23, 2004 the first litter of cubs was born at the Zoo, two males and two females. These cubs are the result of the Cheetah Species Survival Plan in action at the National Zoo. This is the first litter of its kind in the zoo’s 115 year history (Smithsonian,

2005 p.34).

In Africa, a center for cheetah conservation supports the Global Cheetah Action Plan (GCAP) and also the Global Cheetah Forum. By supporting these organizations people are educated about the basic ecology of a cheetah and the importance the cheetah plays in the ecosystem, they are also informed of livestock and game management involving the cheetah. The conservation center also participates in the Cheetah SSP and is planning to expand its breeding program at the Africa Zoo Breeding Farm, by building new facilities to hold 25-30 cheetahs. The main goal of the cheetah conservation center is to educate the public about matters relating to cheetahs and to develop programs to do scientific research in southern Africa to help with the survival of the cheetah (Saint Louis Zoo Conservation).

Africat is another organization focused on saving the declining cheetah population. Africat was founded in 1992, with an aim to promote conservation of the African cat populations, primarily those in Namibia. This organization strives for saving cheetahs that are trapped by hunters or farmers. Africat also tries to educate those people who trap and kill cheetahs about the importance of the cheetah population and its survival. When saving a trapped cheetah, it is first tranquilized with a dart gun and then transported to a veterinary facility where it can be micro chipped and given a physical examination along with having blood work done. The microchip will help in the identification and tracking of the cheetah over time (Africat, Conservation).

As a part of captive breeding, mating and courtship behavior must be taken into account. Courtship behavior is rarely seen in the wild and little is known about the cheetah and its breeding habits. San Diego Wild Animal Park has been successful in breeding rare and endangered species including the cheetah. This animal park has also been successful with learning about the mating rituals of the cheetah. As previously mentioned, it is important that the male cheetah be kept separated from the female cheetah until mating time. Courtship behavior is found in early mornings and late afternoons after sundown. Courtship behavior in the cheetah tends to begin mid June through November, with the most intense season between October and November. In captive cheetahs it has been found that one male cheetah is dominant over the other males and is the primary courting male. Mock fights between cheetahs are also a sign of courtship behavior, the males and females will chase each other in a playful manner. Males tend to compete with each other for the female mate, but females do not seem to exhibit competition between each other for the male (Eaton, 1974 p.107-119).

Conservation of the cheetah has become very costly over the years. "To fully fund a cheetah from birth for a period of ten years costs approximately 350,000 dollars. These costs include food, shelter, medicine, property rents, trainers, etc...The costs of one conservation shelter alone can be in the millions of dollars depending on the amount of cheetah present. In order to secure the funds needed to conserve the cheetah, conservations are continually working with zoos to raise funds" (TED Case Study).

VI. Conclusion

"Although habitat acquisition and protection as a park or refuge is desirable, it is not always possible. In the coming years it may take more than habitat protection alone to prevent extinction of some species. Activities such as captive breeding, habitat renovation, and species reintroduction will be necessary to maintain effective breeding populations of some species. Captive breeding is presently being used as a temporary expedient to prevent extinction of some species. It is a short-term solution to a long-term problem. A species can be maintained in captivity until a secure habitat is found or while a former habitat is being renovated. Captive

breeding can also be used to produce a large number of individuals to supplement existing populations. Long-term maintenance of a species in captivity is not biologically or economically sound, and it should be avoided if at all possible” (Kaufman, 1993 p. 137).

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Adsorption of NO_x on Copper Exchanged Zeolites (Cu-ZSM-5)

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ABSTRACT

Adsorption of NO_x (X=1, 2) on copper exchanged ZSM-5 are investigated using *ab initio* method. Cluster models, ranging from 1T to 3T (T is silicon or aluminum) are used to represent the structure of zeolites. Equilibrium structures are calculated at the HF and DFT theory levels. Relative energies among different adsorption complexes are calculated. An embedded cluster model method is used to investigate the framework effect on the stability of the adsorption complexes.

INTRODUCTION

Acid rain has received worldwide concerns during the past thirty years since it deteriorates our vulnerable environment and leads to serious health problems.¹⁻⁴ “Acid rain” is actually a broad term (so-called acid deposition) used to describe both wet and dry ways that acid falls out of the atmosphere. Wet deposition refers to acidic rain, fog, and snow and dry deposition refers to acidic gases absorbing on surfaces and particles settling out. The direct effect of acid deposition is to harm our natural environment, including plants, aquifers, and aquatic organisms. Another important effect, but frequently ignored by many people, results from chemical reactions with existing minerals in the soil to generate the soluble toxic metal ions, which eventually enter our bodies via foods and/or drinking water. Accumulation of such toxic metals can lead to serious health problems.¹⁻³

Tremendous efforts, including manpower and money, have been spent in controlling acid rain. However, it is neither an easy task, nor a short-term fight. NO_x, a mixture of NO and NO₂, is one major contributor to acid rain¹⁻⁴ and is emitted primarily in exhaust fumes from millions of automobiles.² In 1998 this accounted for 53% of NO_x emissions in the United States (Figure 1). In 2000 the total emissions of NO_x in the United States was 5.11 million tons.¹ It is of interest and importance, therefore, to develop a powerful catalyst to selectively reduce NO_x and eventually to reduce the damage caused to human and environments.⁵⁻⁸

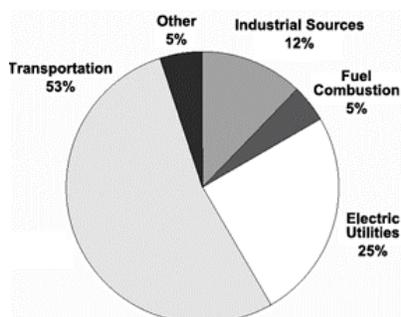


Figure 1. NO_x Emissions from the United States in 1998¹

Zeolites are crystalline materials consisting of a large number of tetrahedral TO₄ units (T: primarily silicon with a small portion of aluminum) (Figure 2) connected to each other via

oxygen to form three-dimensional cavities and channels (Figure 3). The crystalline framework supplies a high internal surface area and active sites, which make zeolites good adsorbents and catalysts.⁹⁻¹¹ Over the past decade, the medium-pore ZSM-5 zeolite has attracted a lot of attention. Because of small pore size and its uniform distribution, the internal surface developed by the porous channels is much bigger than the external surface. The higher ratio of internal to external surface area (about 4:1) leads to its higher activity and selectivity.¹²⁻¹³ Due to the existence of the aluminum in the TO_4 unit, oxygen atoms adjacent to the aluminum show the partial negative charges, which can be balanced by external cations. Copper exchanged ZSM-5 (Cu-ZSM-5), a new derivative of ZSM-5, is the most active catalyst for the direct decomposition of NO_x to date.¹⁴⁻¹⁵ Cu-ZSM-5 has very similar adsorption properties to ZSM-5.¹² The ratio of internal surface area to external surface area is even larger than that of ZSM-5. The study of pore size distribution demonstrates that Cu-ZSM-5 represents a well-defined distribution with main micropore size at 0.7 nm with a limit of 2 nm. Experimental studies¹⁶⁻¹⁷ showed that Cu-ZSM-5, instead of ZSM-5 or naked copper cation, exhibits high and stable activity in decomposing NO_x into N_2 and O_2 , major components of the air. But the detailed adsorption-decomposition reaction mechanisms remain unknown from the experimental investigations.

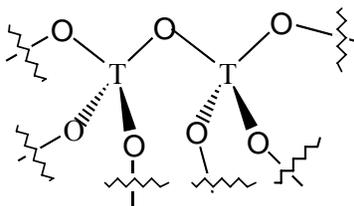


Figure 2. The tetrahedral TO_4 unit in zeolites

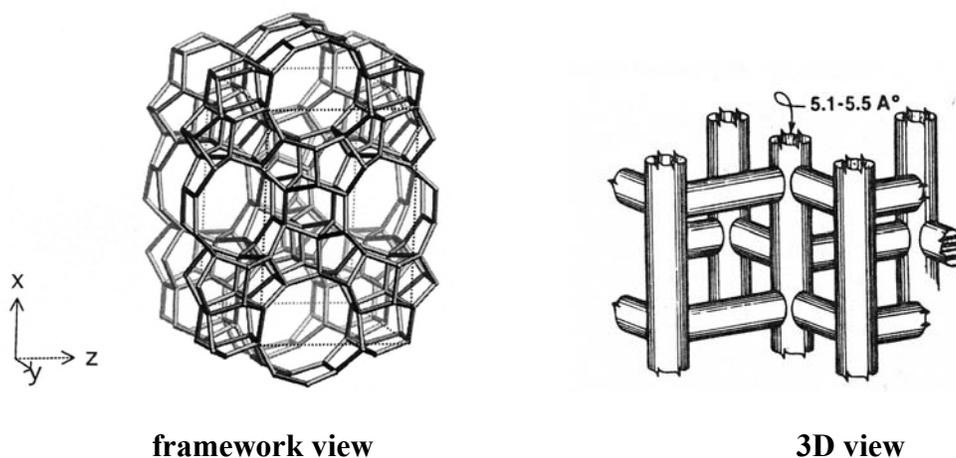


Figure 3. The structure of zeolite (MFI type)¹²⁻¹³

The computational tool is an alternative and/or support to the experimental research. But theoretical studies (*ab initio* calculations) of bulky zeolites are limited by computer resources. With the recent development in theoretical methods, two affordable approximations, the cluster model and embedded cluster model, can be used to represent the interaction between adsorbed molecules (adsorbate) and zeolite fragments, as well as between zeolite fragments and the whole

framework.¹⁸⁻²³

The mechanism of adsorption-decomposition of NO on Cu-ZSM-5 is very complicated and involves many steps.²⁴ This study focused only on the adsorption of NO on Cu-ZSM-5, the first step in the adsorption-decomposition process. Only chemically bonded adsorption complexes may be stable enough to allow subsequent decomposition reactions. There are three possible structures of the NO-Cu-ZSM-5 adsorption complex. *Ab initio* calculations of the structure of these complexes were performed to determine possible adsorption complexes and energy barriers.

APPROACHES

There are two models, cluster and embedded cluster models, used in this project to simulate the zeolite structures.

The cluster approach is the most common method for investigating zeolites. Zeolite is treated as a very small neutral cluster cut out of the bulky crystal structure. Hydrogen atoms terminate the resulting dangling bonds at the boundary.²⁰ Since the cluster model only takes a very small part of the zeolite structure, two important deficiencies of cluster models exist²⁹. First, the cluster model is different from the zeolite structure because atoms near the cluster boundary, arbitrarily terminated by H, are in different electronic environments. The second is potential deficiency. A potential is generated from the long-range electrostatic forces between the cluster model and the zeolite framework, which is missing in cluster calculations. Because of this, the previous studies using the cluster model may not give the quantitatively correct results.

A recently developed embedded cluster model method can be used to avoid/alleviate those two problems without significantly increasing the computational costs³⁰⁻³². The first model is the reactive site of interest at the center of the surface, which is the same as the cluster model and can be calculated at the theoretical level aforementioned, but the size is restricted by computational resources. The second model includes the surface reactive site plus its adjacent subsurface atoms. This model is computed at the level of the molecular mechanics, which is much less computationally expensive. Since the geometry change in the framework is usually tiny and not our primary concern, such calculations can give us the information about the potentials between the reactive sites and the framework. Therefore the embedded cluster model can fix, or at least improve, the well-known deficiencies of the cluster model.

COMPUTATIONAL DETAILS

Qualitatively correct results can be supplied by cluster model methods at a substantially lower computational cost. Full optimizations of cluster models (Figure 4) were performed at the Hartree Fock (HF)²⁵ and then Density Functional Theory (DFT)²⁷ levels with the 6-31G(d) basis set using the *ab initio* suite of GAMESS package.²⁸ The embedded cluster model used in this project is called Surface Integrated Molecular Orbital/Molecular Mechanics (SIMMOM)³⁰, which can have quantum mechanics treatment over the reactive site but uses TINKER, a molecular mechanics method. Additionally, MacMolPlt, a 3D visualization package, is used to view the optimized geometries.³³ All calculations were performed on a Mac Power G5 cluster.

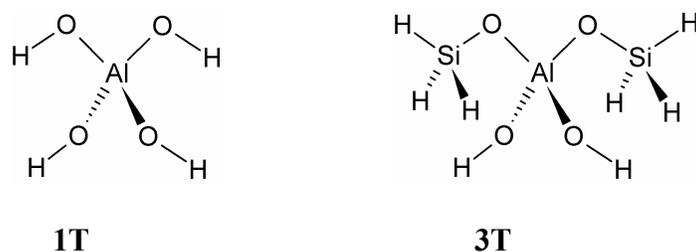


Figure 4. The cluster models

RESULTS AND DISCUSSION

To date only 1T and 3T cluster models have been calculated. There are three possible ways for NO to adsorb on Cu-ZSM-5 (Figure 5). The first possibility is the formation of a bond between Cu and N to give the Cu-N-O adsorption complex (**A**). Alternatively, a bond between Cu and O could form, yielding the Cu-O-N adsorption complex (**B**). The remaining possibility is for Cu to bond to both N and O to make a Cu-N-O ring structure (**C**).

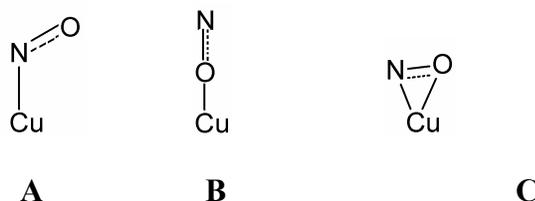


Figure 5. Three possible NO-Cu adsorption complexes

Bond lengths and angles of 1T and 3T adsorptions complexes are listed in Table 1. For **B** and **C** type structures, the binding of Cu on zeolites heavily depends on the size of the cluster model. The difference between the Al-Cu distances in 1T and 3T may be as large as 0.05 Å. The effect of cluster size does not change bond lengths in structure **A** greatly.

Molecular NO was calculated to have a bond length of 1.1589 Å. The bond length of N-O in structure **A** is the closest to that of molecular NO. The N-O bond length in **B** is a little bit longer because the negatively charged O is located between positively charged N and Cu. Competition of attractions between N and Cu may cause the longer N-O bond. Clearly structure **C** leads to the longest N-O bond (about 0.08~0.09 Å longer than molecular NO) since Cu forms bond with N and O simultaneously. If this adsorption complex is the most stable one, the longer N-O bond may be helpful to decompose NO into radicals or atoms.

Experimental studies have determined an IR adsorption peak at 1812 cm⁻¹ for Cu-NO, while molecular NO has an adsorbance peak at 1880 cm⁻¹.³⁴ The first adsorption complex, Cu-N-O, has a calculated adsorption peak at 1846 cm⁻¹ for the 1T model and 1860 cm⁻¹ for the 3T model. Adsorption peaks for the Cu-O-N complex is calculated to be 1820 cm⁻¹ for the 1T model and 1801 cm⁻¹ for the 3T model. The third adsorption complex with the Cu-N-O ring structure has a calculated adsorption peak at 1391 cm⁻¹ for the 1T model and 1404 cm⁻¹ for the 3T model.

Table 1. Distances and bond angles calculated at the DFT level with the 6-31G(d) basis set.

Adsorption type	1T			3T		
	A	B	C	A	B	C
Distance (Å)						
Al-Cu	2.7793	2.8323	2.8353	2.7898	2.7763	2.7706
Cu-N	1.7191		1.8240	1.7241		1.8351
Cu-O		1.7589	1.8620		1.7667	1.8625
N-O	1.1777	1.1880	1.2453	1.1759	1.1862	1.2421
Bond angle (degree)						
Cu-N-O angle	149.8		71.91	149.2		71.57
Cu-O-N angle		180.0	68.62		180.0	69.18
O-Cu-N	123.5		114.9	139.0		115.5
O-Cu-O		140.3	126.2		138.8	122.3
Dihedral angle (degree)						
O-Cu-N-O	88.45	0.00	0.00	93.83	0.00	0.00

The adsorption energies show little variation between 1T and 3T models (Table 2). In all cases the larger reactive site model yields lower adsorption energies. The Cu-N-O and CuNO ring complexes have the largest adsorption energies. These are on the order of 10^{-4} kcal/mol. The Cu-O-N complex, on the other hand, has an adsorption energy in the range of 50% of this value. This difference in adsorption energies implies that NO would adsorb weakly, if at all, via the Cu-O-N adsorption mechanism. Table 3 shows the total energies of the adsorption complexes. The energy differences between the 1T and 3T models are on the order of 1 kcal/mol. This is due to the additional TO₄ units in the 3T model. However, energy variations among the three complexes follow the same trend.

Table 2. NO adsorption energies calculated at the DFT level with 6-31G(d) basis set

Adsorption Type	1T	3T
A	-1.545×10^{-4} kcal/mol	-1.360×10^{-4} kcal/mol
B	-8.215×10^{-5} kcal/mol	-7.279×10^{-5} kcal/mol
C	-1.378×10^{-4} kcal/mol	-1.236×10^{-4} kcal/mol

Table 3. Total energies of the adsorption complexes calculated at the DFT level with 6-31G(d) basis set

Adsorption Type	1T	3T
A	-3.690496 kcal/mol	-4.616929 kcal/mol
B	-3.690424 kcal/mol	-4.616866 kcal/mol
C	-3.690479 kcal/mol	-4.616917 kcal/mol

SUMMARY

Geometry optimizations were performed on adsorption complexes using 1T and 3T reactive site models. The geometries obtained are fairly consistent between the 1T and 3T reactive site models. The NO bond lengths in the Cu-N-O and Cu-O-N complexes are close to the bond length in molecular NO. The CuNO ring structure had a longer NO bond length than expected. This may be attributed to the strain caused by the small bond angles in a three-membered ring. The adsorption energies of the Cu-N-O and CuNO ring complexes are on the same order of 10^{-4} , while the Cu-O-N complex has an adsorption energy about half this value. Therefore, formation of a Cu-O bond yields a loosely held complex.

Vibrational analysis indicates that the CuNO ring complex is an unlikely adsorption mechanism. The NO stretch in this complex is 407.23 cm^{-1} away from the expected adsorption peak. The Cu-O-N complex has an adsorption peak between the experimental Cu-NO region (1812 cm^{-1}) and the molecular NO region (1880 cm^{-1}). It is possible from the IR spectrum that NO adsorbs to zeolite by this method, albeit weakly. Lastly, the Cu-N-O adsorption complex adsorbs in the $1800 - 1820\text{ cm}^{-1}$ region. This agrees well with the experimental data with an adsorption at 1812 cm^{-1} .³⁴ Therefore, the Cu-N-O complex is a likely candidate for the adsorption mechanism.

The data from 1T and 3T reactive site models show some trends. However, it is necessary to increase the size of the reactive site model to 5T and 10T. This would show with greater certainty the reliability of these trends, as well as provide more accurate energy profiles. In addition, NO₂ adsorption on zeolite should be examined with the same reactive site models to provide a more complete understanding of NO_x adsorption on zeolite.

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Guy de Maupassant's Characters and their Relationship to Animals

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Guy de Maupassant is one of France's most beloved 19th Century authors. He wrote more than 300 works, which include short stories, series, and novels. Maupassant is categorized as a realist writer, and he paints a profoundly hopeless world in his stories. He often uses the unconscious, selfishness, and cruelty to describe his characters. According to the site L'encyclopédie des Gens de Bien, Maupassant describes his characters like "a beast that is scarcely any better than any other animal." My point is that Maupassant himself said that his individual characters are beasts, animals in a sense. To prove that this is true, I have examined four short stories that Maupassant wrote: "Une Partie de Compagne," "Clochette," "La Parure," and "Amour." In each one, there was a reference to animal imagery and a comparison between the characters.

As I stated above, Maupassant is considered a realist. Others categorized him as a naturalist. According to Corinne La Marle, "realism consists of painting nature, objects, and men as they really are, without concern for their beauty or their unattractiveness, and not as the imagination of the painter or writer sees them to be. The school of realism was born from the need to react against sentimentalism, to be inspired by scientific methods, and to fade behind the subject." She goes on to say: "On the other hand, naturalism is also a veritable system of analysis and explanation of nature. [...] It claims to make literature into an experimentation of the real world." It is my argument that Maupassant, as a realist writer, uses the explanation of nature and the real world to tie together his stories. In addition, he uses these elements in his comparisons with animals. As I previously stated, realism explains the beauty and unattractiveness in humans and in animals. The short story "Clochette" is about an old dress designer, and the narrator visits her once a week at her house. He explains the old woman's history, her secret love, and his feelings about her death. In the story, we learn that Clochette was "a tall, thin, bearded woman, actually rather hairy, because she had a beard on her whole face, a surprising beard, unexpected, that grew in incredible bouquets, with curly tufts... She had some on her nose, under her nose, around her eyes, on her chin, on her cheeks; and her thick eyebrows had an extravagant length, all grey, bushy, and standing on one end..." (1). I think that Maupassant presents her like an animal, like a beast. Even though he never says what type of animal she is, the comparison is clearly there. Also, if a man or a woman were described in this manner, with all this hair, one would think that Clochette is an animal, maybe a type of dog, or a bear, or any other creature. The definition of realism suggests that Maupassant shapes his characters into creatures that have no concern for themselves physically. It seems that Clochette has no concern for the way she looks; otherwise she would have gotten rid of the massive amounts of hair on her face. Animals are natural beasts in their habitat; they have no concerns about their appearance. Human beings, on the other hand, are constantly trying to make themselves look as presentable as they can. Because Clochette does not have any concern for her appearance, she is seen as an animal. This shows Maupassant's desire to put humans and animals on the same level.

"La Parure," is about a couple that is extremely poor, and consequently, has nothing. One night, the Minister of State Education invites the couple to a party. But the poor wife has nothing decent to wear. She saves her money and eventually buys a beautiful dress and she borrows a

diamond necklace from her friend. At the party, the wife and her husband have a wonderful time, but afterwards, the wife realizes that she has lost the necklace. After ten years of saving, the couple buys another diamond necklace to give to their friend. At the end, their friend tells them that her necklace was fake.

Concerning naturalism, the definition says that a part of naturalism is the explanation of nature. This explanation is shown in “La Parure.” When the couple receives the invitation to the party, the wife complains that she has nothing to wear. The husband responds, “You can wear real flowers. It is very chic this season...” In my opinion, this situation is an example of nature, because the husband thinks that his wife should *wear* flowers. The flowers would be *on* the wife, which signifies that the wife *is* natural – that is she is closer to nature and therefore to animals. Of course, this falls in line with the traditional representation of women as being very close to nature. So, I believe that the wife is being put in the same physical location as an animal. Flowers can be found outside in nature, and if the wife is wearing flowers, she can be thought of as outside and closer to nature.

This argument concerning nature is also proven when, later in the story, the couple looks for the diamond necklace on the streets of Paris, but they don’t find it. The text says “they went down towards the Seine, desperate, shivering. Finally, on the train platform, they found one of those old nocturnal couples that no one sees in Paris except when night falls, like they were shameful of their poverty during the day” (4). Here, Maupassant compares the couple to nocturnal animals. The husband and wife violently look for the necklace, just like nocturnal creatures look for their prey. An animal looks for food when it is in its habitat, and nature is part of that environment. In addition, Maupassant says that these nocturnal creatures are ashamed of their poverty during the day. The same thing can be said concerning the couple. They are poor, their clothing is old and tattered, and their house needs to be repaired. Because of these things, they don’t want to go out, especially the wife. They want to stay home because they are embarrassed and miserable. But, on this particular night, they are happy again, mainly the wife, because they were invited to a party, and they put on their Sunday best. Furthermore, nocturnal animals are creatures of the night, this time is the best time for them, and they want to be “showoffs.” It is the same thing with the couple and their attire.

It is also crucial to notice that there is a certain consideration that must be given to a character that represents an animal. In her article “Maupassant: Présentation des Personnages et Narration Impersonnelle,” Charlotte Schapira says that it is necessary “to compare appearance to reality... Appearance resolved in a real image of the character, an image that, in this case, confirms or invalidates the initial assumption” (47). I believe that this appearance that Schapira talks of is visible in the short story “Une Partie de Campagne.” This story is about a young girl and her family who go to the countryside. The family is introduced to two boatmen, and later in the story, the young girl, Henriette thinks about Henri every day, but she must marry another young man, not Henri. At the end, Henriette is not happy, because she was forced into an arranged marriage.

At first glance, Henriette is an innocent girl, she is sixteen, pretty, and she does not have any concerns. But actually, she is not so innocent, because during the story she makes love to Henri, a man who she has just met. Furthermore, she is compared to a bird, a nightingale to be exact. This event is a part of the appearance topic that I explained above. During the story, Henri and Henriette go into the forest and they hear a nightingale. This bird represents Henriette. Before Henri and Henriette make love, Henriette listens to the bird. The text says that “she had infinite desires of happiness, sudden tenderness that went through her, revelations of poetry

about humans, and such a weakening of nerves and heart, that she was crying without knowing why” (26). Henriette is so impressed by the nightingale that she is overwhelmed with emotions that are transferred onto Henri. This animal is actually the cause of Henriette’s emotions. She is so close with the nightingale that she truly is the nightingale. Since all of her emotions are at the same time as the nightingale’s, she is an animal, just like the bird is.

When the two actually make love, the nightingale “first threw out three penetrating notes that resembled a love call, then, after a moment of silence, it started again with a weakened voice in very slow modulations” (28). These noises are actually Henriette’s noises, but the bird vocalizes them. They are the noises a woman cries when she is making love. It is also important to notice that the nightingale “was having prolonged swoons in one breath, and huge melodious spasms” (28). Again, these noises represent Henriette. This time, it is Henriette’s orgasm, and the bird’s spasmodic song is used to iterate Henriette’s physical spasms. This clearly proves that Henriette is also an animal in the sense that the nightingale is imitating her, and speaking for her. And it is really the sexual relations between Henri and Henriette that represents the nightingale. Consequently, it is another comparison between a character and an animal.

It is now time shift to the moral symbol that represents humans. According to the book La Communication Non-Verbal Chez Maupassant, the author Anne Marmot Raim believes that there is a certain relationship between Maupassant’s characters and animals. Marmot Raim indicates that there is also the moral symbol that is habitually present in Maupassant’s works. In my opinion, the moral symbol is displayed in the short story “Amour.” This story is about two cousins who love hunting. One of the cousins lives on a farm where they hunt. Normally, the first cousin (the narrator) loves to hunt, it is a great passion that he has. But one day, he kills a bird, which is a female, and an interesting twist of events happen.

Allow me to explain. First of all, the narrator recounts his story. He says that he was “born with all the instincts and the senses of a primitive man, tempered by reasoning and civilized emotions. I love to hunt with a passion; and the bleeding beast, blood on its feathers, blood on my hands, my heart tense and weak” (1). Clearly the narrator thinks like an animal. The traits that he explains are the same traits that an animal has. For example, he likes to see blood, and a predator has an instinct to kill an animal it is hunting, therefore shedding blood. I believe that his cousin is a predator too, because he enjoys hunting as well. The narrator is not only a hunter who likes killing animals as a sport, but he is also a hunter who enjoys the kill of his prey. The cousin is the same way.

Consider the subject of the moral symbol. During the course of the story, the two cousins go hunting. At the end of the story, they go in the woods, and the narrator kills a bird. But it is not an ordinary bird. It is a female bird, and her male partner was with her in the sky. At that moment, the narrator feels terrible. After the narrator kills the female, he says, “then, in the space above me, a voice, a bird’s voice cried. It was a short groan, heartbreaking; and the animal, the little animal that was spared, started to turn around in the blue sky above us while looking at his dead companion that I killed between my hands.” After, he continued, “certainly, he had nowhere to go; he was always circling and crying around us. A suffering moan had never tore my heart like that sorry call, like the awful criticism of that poor lost animal in that space” (4). The moral symbol here is that the narrator finally realizes that hunting is a horrible treatment of animals. He understands that he killed the lover of another “person.” The cousin ended up killing the other bird, because it was circling the sky, and was still crying for its lover. In the end, the narrator put the two birds in the same grave. In this case, the roles of the animal and human were reversed. The narrator was the beast in the beginning of the story, but in the

end, the birds, who are the true beasts, were the humans. The male bird knew that its lover had been killed, and that is a human instinct in my opinion. Maupassant gave the birds human characteristics. The birds had what Maupassant portrays as the actual feelings of “a voice”, and “a love” for one another, and the two were “cold” like humans when they die. The birds, then, are used to teach humans a moral lesson.

In conclusion, it is clear that Maupassant compares many of his characters to animals. I think that it is through this representation of his characters that he shows he is a true realist. In her article, Charlotte Schapira says that “...for the reader, the events and gestures of Maupassant’s characters sometimes guard a certain mystery, the same mystery that one’s behavior in real life so often explains” (48). I think that this mystery is one of the reasons to read Maupassant. I also feel that his comparison between humans and animals is part of this mystery. Maupassant wants the reader to think about his stories, and in a sense, how humans are really animals, thereby revealing their true nature. And that is why it is clear that he compares his characters to animals in several of his short stories.

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The Effects of Inquiry-Based Science Lessons on Kindergarten Students' Knowledge of Characteristics of Life

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Abstract:

We studied kindergarten aged children and their misconceptions about models. We identified their misconceptions about living and non-living things. We wanted to investigate the students' understanding of living and non-living things and how inquiry based lessons changed their understanding. Our research question was, what impact does our use of models in inquiry-based teaching have on misconceptions kindergarteners have about living and non-living things. We observed, pre-assessed, analyzed data, taught two lessons, post-assessed, and analyzed data to answer our research question. We found that giving students the characteristics of life (eating and drinking, growing and changing, reproducing, and moving on its own), using models, using inquiry-based lessons, improved students' ability to identify living things in nine of the fourteen questions. After interviewing five students before and after instruction we were able to determine that there was 80% growth in their ability to describe living and non-living objects by using the characteristics of life.

Introduction:

There are many misconceptions that hinder students learning and also interfere with teacher's instruction. These misconceptions impede a teacher's ability to create students' understanding of scientific concepts. It is one of the important goals of teaching to correct misconceptions. Misconceptions are often attributed to students coming to the classroom with different backgrounds and different levels of understanding. For example, students may have preconceived notions about particular topics. They may have nonscientific beliefs, conceptual misunderstandings from previous instruction, vernacular misconceptions or factual misconceptions. These are all different types of misconceptions teachers need to discover and correct. Without careful attention, students could carry these incorrect misconceptions throughout their lives, which may hinder their education. For example, we don't want students to think that a seed is not alive, which could be one of the misconceptions of not understanding living and non-living things. Students may have this misconception from seeing various models of objects, which depict living things having eyes and mouths. If students are not exposed to models that show living things that do not have eyes and mouths, and are not given the appropriate questions to ask to find out if something is alive, they could think anything without eyes or mouths are not alive. We don't want students to carry these types of misconceptions throughout life because it will create more misconceptions in science. If a student does not believe that a tree or plant is alive it will be hard for them to understand photosynthesis. There are numerous problems that could arise from not understanding life, such as a student that sees a picture of a sun with eyes on it thinking that the sun is alive. In looking at related research we want to facilitate the students' construction of knowledge and help them to be able to correctly identify living and non-living things based on appropriate characteristics.

In science instruction and practice there is particular attention paid to learning the unifying concepts and processes or "big ideas." The big ideas of science are systems, order, and organization, evidence, models, and explanation, constancy, change, and measurement, evolution and equilibrium, and form and function. How students' understand these concepts and processes

helps shape the way they view the world. In this action research project we focused on models as the “big idea”, students have misconceptions based on the prior knowledge that they hold. If the students have been exposed to models and are not clearly taught the characteristics of life, they may have beliefs that are not correct. In the case of the sun, many students would say it is not alive, however, if you add a face to it, they may be confused, and say it is alive. These students attach facial features to living things. When given the means to discriminate between living and non-living things, the same student may ask and answer questions in order to arrive at the answer that the sun is not alive. They would be able to say the sun does not drink water or eat food, the sun does not reproduce, it does grow and change, and it does not move on its own. Children are exposed to living and non-living objects everyday. They are exposed to these objects, but are never really introduced to the characteristics of life until they are older. We also are interested in pursuing a variety of living things such as cats, dogs, trees, and seeds. Children often have a vast range of prior knowledge about the world around them. This can play a big factor of why children have previous misconceptions about certain science concepts such as living and non-living. According to Jewell (1), “Children’s understanding of seeds is one area that appears to have been neglected.” Students have a hard time classifying seeds as living or non-living because they attribute living objects as having eyes or having movement. According to researchers and our own study, this is one of the most complicated forms of life that children often have a hard time classifying.

Research:

It was important for us to find out what related research existed and if other researchers also found what we were noticing. The related research helped us to determine what we may find in working with children of this age and provided us with a basis for comparison and contrast. In the article, “Examining Children’s Models of Seeds”, many of the students that were examined in these studies could not correctly classify seeds as being living or non-living and when asked if a seed was alive a child responded, “It’s not living because it doesn’t have any eyes” (Jewell, 3). These children clearly did not understand what characteristics all living things have. They also clearly attribute eyes as a characteristic of living things. Research done with students in China showed similar results to the students at Erikson Elementary. (Chen and Chih-Yen) The students that were being studied identified these animals as living based on movement and eating patterns. (Chen, 63). We compared our research to the research that was conducted over seas so we could determine if the kindergarten students we worked with hold the same misconceptions as the students in China. The studies that were done in China focused on classifying animals as living and non-living according to pictures that were given to elementary students.

The students that we worked with used different characteristics to identify animals as living, giving responses that had to do with humans using an object could make it alive. This answer was given in reference to kites, bridges, and clocks. This research (Chen, 63) enabled us to build upon existing research by using already identified objects that may be difficult for students to identify.

Research Question:

We decided to concentrate on living and non-living objects with the kindergarten class. The results show that Kindergarten students seem to believe that certain objects are not alive or alive based on characteristics that they attribute to life. This research leads into our research question: What impact does our use of models in inquiry-based teaching have on the misconceptions kindergarteners have about living and non-living objects?

Demographics:

The school in which we are conducting our action research project is an older school and was built under the open classroom philosophy. The students are organized in groups of four to five students in tables in the center of the room. There are centers in the room and a meeting carpet in the front of the classroom. The teacher's desk is located at the back of the classroom. The classroom in which we are working has twenty-six students, sixteen boys and ten girls. The teacher feels that there are four students in the class that are above average in ability, sixteen who are average, and six that are below average. Based on the definitions provided by the State of Michigan on ethnicity, there are twenty white students, three black or African American students, and three Asian American students. There are three students in the classroom that are English Language Learners. The curriculum for science is theme based and the students were working on studying living and non-living things during our visits.

Procedures:

Michelle started our research project by discussing the time schedule and science topic with the cooperating teacher. Mrs. William's kindergarten class was learning about living and non-living objects in the weeks of our visits, so in our pre-assessment we gave the students a worksheet that had a range of living and non-living objects and ask the students to circle the pictures that represent something living. We wanted to research the misconceptions that the kindergarten class may have about models in relation to living and non-living objects. After the students completed this worksheet, then we interviewed five students. We wanted to interview a range of students so that we will understand the reasoning behind some of the students' answers. The students we interviewed had different abilities (an English Language Learning student, a very bright student, a student that understands concepts but did not know how to read, and the last two were random). We discussed what we were looking to find out with the classroom teacher and she helped us to make the selection of students' to use for the interviewing process. We interviewed these students to tell us why they circled certain objects and didn't circle the others on the worksheet and recorded their comments. This allowed us to write down student responses in correspondence to their answering of pre and post assessment questions. We analyzed the student responses to help us develop lessons and see patterns of growth in student thinking.

After we pre-assessed the students, we then interpreted the data that we collect by evaluating the students' responses. In order to understand where these students are, we sorted out the responses according to correct and incorrect responses. In our pre-assessment we did have some student absences and also some results that could not be counted due to marking of both boxes. This was corrected to avoid this problem in the post-assessment. We determined what type of misconceptions or lack of knowledge these students had and then were able to plan our lessons.

After we taught these lessons, we created a post assessment to see what the students learned and if their misconceptions changed. We learned from the pre-assessment that we needed to re-design the post-assessment in order to make it easier to understand. We enlarged the pictures on the front of the pre-assessment, changed the back to pictures as well, and also showed each student a larger picture for giving the post-assessment, asking the students to circle the things that represent something that is alive. This information let us know how well the information was learned by the students and let us reflect on our lessons and teaching. We compared the pre and post assessment results and determined some of the kindergarten students still show misconceptions about this concept and others were able to show growth from pre- to post. This process gave us great insight about students' misconceptions and is an excellent

stepping-stone for entering the classroom. It provided us with a sample of what may work or not work in the classroom and showed us the value of action research in teaching and learning.

Data Analysis

Pre-Assessment:

In the pre-assessment 100% of the class correctly identified the cat, dog, and people as alive. 26% of the class incorrectly identified the remaining questions. In interviewing five students indicated that ability to explain reasoning for their answers was inaccurate in four out of five of the students. In viewing the pre-assessment data it is important to point out that we part one and two looked different, part one asked students to circle the pictures that represent living things, and part two asked the students to check the box if it was alive or not alive. This accounts for the variance between no students marking both in part one and many students marking both in part two. In doing the assessment in this way we found that the data for part two was not very helpful as there were a number of students who checked both boxes. We decided that this would need revision in order to provide more accurate data in the post assessment. (See appendix for pre and post assessments) It is important however to note that when interviewing students if they had checked both boxes we asked the same questions and they gave a clear answer as to what they thought. We do not think that the students' thought something could be both alive and not alive at the same time. In viewing this data questions one, two, three, five, six, nine, ten, and eleven should be marked alive. Questions four, seven, eight, and twelve should be marked not alive.

Initial Interview responses:

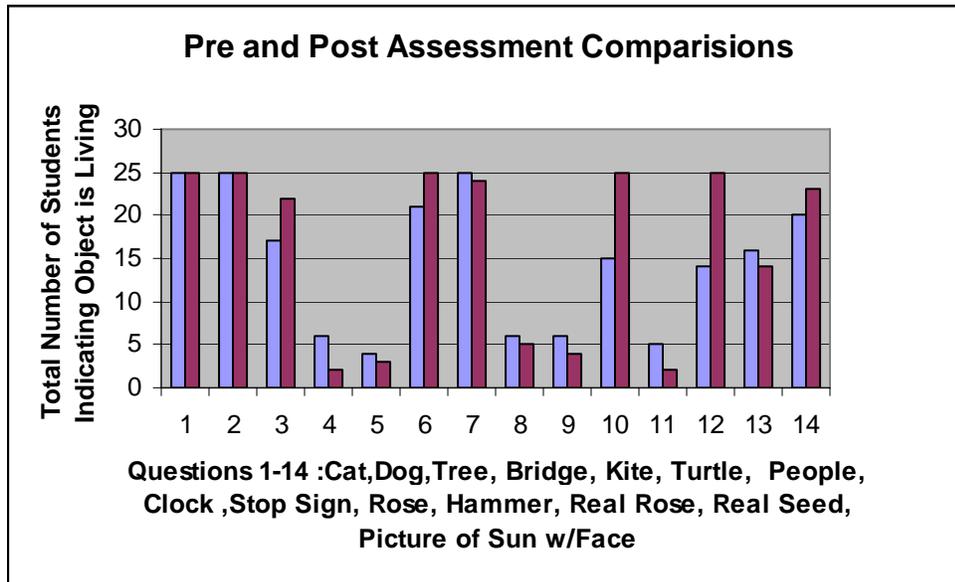
Not all children had a response to give when asked tell me about this picture...how do you know it is alive/not alive. Questions were worded and asked based on if they circled picture or did not. Responses given are recorded using wording given by students, if no answer was given no response is recorded. The interviews gave us more insight into what students were thinking about when they were circling a picture. We felt that this data was easily compared with the ideas that other classmates expressed during group discussions. In this first set of responses we saw trends toward answering that something was alive because it had a nose, smiled, had eyes, and other human like characteristics. We saw vague explanations as to why something was or was not circled and no response was also a common answer. There was very little evidence to an understanding of all living things reproduce, move on their own, eat and drink, and grow and change. In using a real rose and real seeds there was still only one out of five students that could give a response that was scientifically appropriate and used the characteristics of life in the description.

Post-Assessment:

We revised the post-assessment so that part one and part two involved students circling the picture of the object that they felt represented a living thing. In the post assessment all students that changed their answers changed them correctly. The students interviewed were able to provide more appropriate explanations using the characteristics of life to explain their answers.

There was also a decrease in students giving no response when asked why they did or did not circle an answer. The student that correctly identified all of the items during the pre-assessment did the same in the post-assessment but was able to better support his answers using appropriate reasoning. We saw an overall increase in appropriateness of the answers however still saw that it was hard for some students to give up the idea that all living things don't talk. This compared with the overall discussion with the rest of the class, many students were more

confident discussing plants and seeds, and all were able to state that living things do not all have eyes. However, changing misconceptions can be difficult, but we are encouraged by the change that occurred in such a short time. In viewing these data questions one, two, three, five, six, nine, ten, and eleven should be marked alive. Questions four, seven, eight, and twelve should be marked not alive. Pre assessment data is in purple and post is in burgundy.



Sample of Interview Responses Pre and Post Assessment:

Part 1: Kite- In the pre-assessment three out of five students that we interviewed thought that the kite was alive because it could fly. There were two out of five students that did not have any response. In the post assessment many of the students thought that the kite was not alive because it could not move on its own. There was one student that did not have a response.

Part 2: Sun- In the pre-assessment two out of the five students thought the sun was nonliving because it has no movement. Two of the students thought that it was living because the sun had eyes and because it was happy. Only one of the students had no response. In the post assessment three out of the five students thought the sun was nonliving because it could not move on its own and that it was just a rock of fire. Only one students thought it was alive because it makes flowers grow. The other student had no response.

Real Seed- The pre-assessment indicated that three out of the five students being interviewed thought that the seed was alive because it's brown and the seeds grow into trees. One student thought that it's not alive because seeds cannot walk. The other student had no response. In the post assessment there was a shift in the students reasoning. All five students thought that the seeds were living objects because overall they grow and develop into flowers.

Results and Conclusions:

There were twenty six students present for the pre-assessment and post assessment of which five were interviewed, there was one student absent for the teaching of lesson one, and all

students were present for the teaching of lesson two. In looking at the pre-assessment data it was clear that students were able to correctly identify the cat, dog, and people as living. As a class overall they did well at identifying living things, however, the interview revealed that the students had reasoning that was similar to what we had found in our related research. They had a hard time knowing what it meant to be living, they lacked the ability to explain using appropriate characteristics of life why something was alive or was not alive. Student responses as shown (see data analysis section, tables, responses, and graphs) showed students did say things such as if it has eyes or talks then it is living. The student responses helped to provide us with a basis for understanding what the thoughts were that students had about characteristics of life. The student responses in the pre-assessment and in general discussion revealed that reasoning about if an object was alive had a lot to do with if it had eyes, glasses, was happy, or talked. We kept this in mind in designing our lessons what misconceptions were revealed in the pre-assessment. We knew we needed to make a point of showing that there are living things that do not have eyes or talk. In the first lesson we wanted to provide students with the characteristics of life and questions that they could ask when looking at a picture to see if they could figure out if it represented a living thing. We also noticed that students seemed to have trouble with living things that did not have eyes and their description of them. In our second lesson we focused in on seeds as living things. We hoped that through doing a lesson on seeds and expanding the discussion to trees, plants, and flowers, we could help students change their thinking about living things having eyes and talking. We framed this lesson by using the characteristics of life again to help the students to see that seeds grow and change, need food and water, and discussed that as they grow and change they can move toward the sun on their own. We also redesigned our post assessment to make part two more clear for the students. We found that in the pre-assessment part two that the design of our assessment caused confusion. In redesigning part two into picture format we did not have a problem with answers coming up as both living and non-living, it was clear that if students circled the picture they were indicating that the picture represented something alive.

Comparing our pre and post-assessment data we concluded that students were 100% accurate in identifying cats, dogs, and people as living. Students had no change in their identification of clocks and kites from the pre to the post assessment. Five students still identified clocks as living and four students still identified kites as living. In thinking about why this did not change we thought that the students were still having a hard time grasping what it meant to move on its own. Although movement is a characteristic of life, a kite and a clock do move. However to some students it is hard to understand at this young age how they are not moving on their own but are assisted by the wind or the inner workings, in the case of the clock. The most impressive part of the findings was change in student thinking and the interview responses. All students that changed their answers changed to the correct response, although not all students got every answer correct, when they did make a change in response it was moved to the appropriate answer based on characteristics of life. Two students changed to identifying trees and seeds as alive and the sun as not alive, three students changed to identifying turtles as living and hammers and stop signs as non-living, four students changed to identifying bridges as not alive, nine students changed to identifying the rose provided in part 1 as alive, and thirteen students changed their identification of a real rose as living in part 2.

This shows that action research can be a powerful tool in the sense that it enables you to find out what you accomplished in the classroom. Using inquiry-based lessons and models as teaching tools and analyzing the change in student thinking using the process of action research

can be very rewarding. The students in the post-assessment were overall able to give better responses using the characteristics of life as to why they identified objects as living or non-living. In the case of students two, three, four, and five they were able to provide more information when asked in the post assessment than in the pre-assessment. It can also be noted that in the post-assessment no response was given for some of the responses where an explanation was provided in the pre-assessment. This may indicate a reworking or making sense of the new information and of previous thoughts by the students. Other researchers to be common have showed this when someone is attempting to correct a misconception; there can be a period of time in which a new reality is being constructed. We know from this project and from related research that changing misconceptions takes time. Since the students had learned some new ideas about what it means to be alive, they may have chosen not to give a response because they knew that they could not give a reason for why they circled or did not circle the object.

Overall this data provides support that by pre-assessing students and analyzing the data in order to create lessons can improve student knowledge of a science concept. It also shows that some students are able to correct misconceptions very quickly and others will take more time. We are convinced as a group that has participated in action research that this is a great tool to use in the classroom. The classroom teacher that we worked with is looking forward to reading this report in order to see the benefits that action research was able to provide her students. Teaching with an inquiry approach is capable of changing student knowledge and is a worthwhile classroom practice. We also have seen that using models in the classroom can enhance instruction and help to correct misconceptions if teachers take the time to make sure that the models are appropriate and are explained to enhance student understanding. On the same point, we can see that when students are exposed to models without explanation or with incorrect explanations they can begin to construct meaning for themselves, which in some cases leads to misconceptions. We feel that by using models along with inquiry-based lessons and by using the technique of action research we were able to see that it was helpful in improving student learning.

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Content Analysis of Screen Names on a White Supremacist Discussion Board

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In today's world, the Internet has become more than an information source. It has become a market place and a meeting place. This new meeting place is different than any that have previously existed, it is not face-to-face, nor does it even require a vocal element. The Internet allows individuals to create and manage identities. Discussion boards have maintained their utility and function over the course of the Internet's development, allowing individuals' to "meet and greet" in relative anonymity. The only identification on message boards is a screen name that is created arbitrarily by the user.

A particularly large white supremacist discussion board, "stormfront.org", has 50,614 members as of May 11, 2005. In general, groups such as Stormfront, thrive under conditions of anonymity. Due to questionable legal practices in the past and concerns about infiltration by "nonbelievers" this group does not expose itself unless they are sure you fit in with their ideology. The Internet allows them, through monitoring and censoring posts on the forums, to test out prospective members before allowing them into the "inner circle" of the group. The following study conducts a content analysis of the identity markers emerging in the online screen names of a white supremacist message board using social identity theory and communication accommodation theory.

Hate on the Internet

As of 2003, the Southern Poverty Law Center's web based "Intelligence Project" counted 751 active hate groups in the United States (SPLC, 2005). According to the Anti-Defamation League (ADL), "the high-tech revolution that has altered our domestic, educational, and workplace routines and habits has brought the same informational and communications opportunities to the organized hate movement" (Anti-Defamation League, 2001, p. 2). Thus, the Internet has become an inexpensive and far reaching means of propaganda for xenophobic groups, and has become a primary source for recruiting new members (Blazak, 2001; Anti-Defamation League, 2001).

The Internet as a type of "social space" remains under considerable debate, however, many agree that the Internet can produce conditions necessary for social affiliation with others through a computer mediated place or space (Crabill, 2003). Thus, of the many facets of the Internet, maintaining contact with others and information seeking are two of the most basic aspects routinely utilized by web users (Nielsen/NetRatings. 2002). Thus, even the most naïve white user may seek information from such sites and be drawn into a community that is tailored to support their own burgeoning view of self as a powerful and viable entity. According to Crabill (2003) "The appeals of hate groups become particularly salient when targeting adolescents—a population which is traditionally engaged in a great deal of information seeking about their own developing and insecurely situated social identities, while at the same time uniquely vulnerable to messages that support and empower" (Crabill, 2003, p. 6).

Social Identity Theory (SIT)

Henri Tajfel is the originator of Social identity theory and developed it through his works on social factors in perception and on cognitive and social belief aspects of racism, prejudice, and discrimination. It seems only natural, since Tajfel used it to study racism, to apply SIT to the white supremacist groups, which are a major source of racism around the world. Tajfel's

definition of social identity is that of “the individual’s knowledge that he or she belongs to certain social groups together with some emotional and value significance to him or her of the group membership.”

Tajfel’s definition of SIT puts emphasis on the concept that belonging to a group gives the person social identity (Suzuki, 1998). A white supremacist would believe that part of his or her identity would be derived from being a member of that group. SIT also explains that people desire to maintain a positive social identity, which comes from comparisons between the ingroup and the relevant outgroup that favor the ingroup (Brown, 2000). It is necessary to remember that the white supremacists are offering an argument about the superiority of whites. They see their argument as a truth and achieve the favorable comparison by being, in their minds, correct. This satisfies the desire to see their group as being positive and thus seeing the self in a positive way.

If one sees their groups is better than another group they will discriminate against that other group. This will expose that superiority. It has been discovered that group members feel better after engaging in discrimination (Brown, 2000). It is not a surprise to find that low status groups that believe their status as a low status group is illegitimate and unstable will show more solidarity and will seek to engage in direct intergroup competition (Hogg, Terry, & White, 1995). If they feel their group is shouldn’t be a low status group and they can change it by dragging down the high status group they will in order to feel better about their group and the self.

The amount of which one identifies with the group can dictate the actions of the individual. Minority status groups, like white supremacist groups, tend to have higher ingroup identification (Brown, 2000). People who have a high identification with the group tend to see both the ingroup and the outgroup as more homogenous than people who have a low identification with the group (Brown, 2000). The gray area begins to disappear and the sides begin to polarize. The mentality of high identifiers becomes one of “you’re with us or you’re not.” This polarization creates special intragroup communication. In order to make their group affiliation distinct, symbols develop and those symbols both include and exclude. A true member of the ingroup will understand the symbol but others will not. The symbols become a symbol of belonging to that group.

The feeling of belonging to a group places one in a social category which defines who one is in terms of the defining characteristics of the category (Hogg et al., 1995). A person who feels that they are a white supremacist will exhibit the characteristics of a white supremacist. The person will talk like a white supremacist and will know and utilize all of the symbols that pertain to the group, in short that person will know the group’s intragroup communication thus tying them to that social identity. Social identities have self-evaluative consequences, and since the white supremacist views their argument as correct they will take the necessary steps to maintain that correctness. Thus any display or action that will tie a white supremacist to their cause will result in a self-esteem boost. For the white supremacist, according to SIT, having a symbol in their screen name that binds them to the ideology of the group, which they see as correct, will make their self concept more positive.

Communication Accommodation Theory (CAT)

CAT basically states that we tailor our communication to the people around us. We either try to sound like the people around us or try to sound different than the people around us. Giles and Coupland define accommodation as “the general sense of adjusting our communication actions relative to those of our conversations partners.” (Gregory, Dagan, & Webster, 1997) Another aspect of CAT is that people change their communications style in order to reflect their

desire to belong to or differentiate themselves from various groups (McCann, Hiroshi, Giles, & Caraker, 2003).

Convergence as defined by Giles and Coupland is “a strategy whereby individuals adapt to each other’s communicative behaviors in terms of a wide range of linguistic/prosodic/non-verbal features.” (Gregory et al., 1997) Attempting to adjust our communications actions to sound more like is convergence. Accommodation and convergence can occur on several levels such as pronunciation, dyadic adaptation, speech rates, pause and utterance duration, vocal intensities and pitch patterns (Gregory et al., 1997). Using the internet as the medium, we look for convergence more in terms of restating ideologies and following the “code” of the white supremacist. There have been many studies that show the need for people to converge with or accommodate to one another to obtain an optimum communication scenario (Gregory et al., 1997). As with SIT, CAT can involve groups. “CAT proposes that speech convergence reflects a speaker’s or a group’s need for social integration or identification with one another.” (Gregory et al., 1997)

The need for identification is where CAT applies to the white supremacist groups. Typically convergence is used to include and to be included into the desired ingroup. A white supremacist would converge and use white supremacist language (slang for example), symbols, and any other ways of expressing their dedication to the white supremacist ideology. The screen name of a white supremacist on a white supremacist website would be almost expected to contain some reference to this dedication. We might not expect to see a reference to a white supremacist ideology on a different website, even if it was the same person, because the desired ingroup is different. Conversely we would not expect a reference to another ideology in a screen name on a white supremacist website.

Referring to a different ideology on a website would constitute divergence. It has been stated that divergence is “often interpreted as an act of linguistic violence”. Divergence is typically used to affirm a social identity (Dixon, Tredoux, Durrheim, & Foster, 1994). Divergence would be expected if a white supremacist came in contact with a black person. The white supremacist would do everything to avoid sounding black. The divergence would reaffirm the white supremacist’s identity as white.

SIT and CAT

SIT purports that if an individual desires a particular social identity, or belong to a specific group, they will strive to situate themselves within the desired identity or group give an element of that (Tajfel & Turner, 1986). CAT purports that communication with ingroup members will be different than communication with outgroup members. Furthermore, the communication patterns of an individual wanting to join a group will accommodate in such a manner to converge with the patterns of the desired group in order to become or at least appear to be a member of that group (Giles, Coupland & Coupland, 1991). In short, for the purpose of this study, these two theories work together when any person wanting to be a member of the white supremacist online community creates a screen name containing a reference to the white supremacist ideology since they would be doing so in order to show belonging or desired belonging and thus enhance their social identity.

Method

Elements of white supremacist ideology were observed in the screen names when looking at white supremacist websites. A thread entitled, “What inspired your screen name?” was found on Stormfront.org. It was decided that this thread would be used to analyze the content of the user screen names of Stormfront.org. In the thread, the forum members describe why they chose

their screen name. This explanation removes some of the interpretation of outside coders when coding the screen names. With the sample selected, the codes were designed.

The screen names were looked at briefly to get an idea of the types of elements present in the screen names in order to create the categories for coding. This inductive design produced nine categories: heritage, patriotism, self-inflation, name, media, hate group, anti-Semitism, picture symbols, and letter and number symbols. Heritage was defined as any mention of a heritage in the explanation of the screen name. Patriotism became any mention of a patriot or of being a patriot. Self-inflation screen names were screen names that contained an element that raised the status of that forum member. Screen names that the user claimed were derived from their real name were to be coded as the name category. If the user stated that they got their screen name from a media source, such as a TV show, a movie, or a book, then that screen name was to be coded as media. The hate group category was comprised of screen names that contained a reference to a specific hate group. Users that specifically chose their screen name for anti-Jewish reasons had their screen names coded as anti-Semitic. Picture symbol screen names contained a reference to a visual object or abstraction. In a similar fashion, letter and number symbol screen names contained a reference to one of the white supremacist letter or number symbols. (See appendix A for more detailed description of the coding and examples)

After the categories were defined, it was observed that many screen names contained elements from more than one of the categories. It was decided that all occurrences of elements in these categories would be counted. This meant that screen names could be counted more than once. Each screen name was counted only once in a total category in order to get the number of the screen names that were coded. This total would be the number used to calculate the percent of screen names that contained each element.

On April 21, 2005 the entire “What inspired your screen name” thread was printed. The thread was then coded. After the first coding, the thread was then coded a second time but a different coder.

Results

The results for the 806 screen names that were coded in the thread “What inspired your screen name?” on Stormfront.org were: Heritage - 30.9%, Picture Symbol - 17.1%, Self-Inflation - 15.6%, Media - 14.6%, Hate Group - 12.5%, Letter or Number Symbol - 12.3%, Name - 10.2%, Patriotism - 4.3%, Anti-Semitism - 3.1%. The percentage represents the percentage of screen names that contained that element.

A second coder to establish intercoder reliability analyzed data. A brief summary of the respective codes follows: Heritage - 92.88%, Picture Symbol - 27.95%, Self-Inflation - 51.09%, Media - 87.26%, Hate Group - 98.11%, Letter or Number Symbol - 85.45%, Name - 90.59%, Patriotism - 89.96%, Anti-Semitism - 36.04%. The results of this leave the categories Heritage, Media, Hate Group, Letter or Number Symbol, Name, and Patriotism as the only statistically significant ones. The unreliability of Picture Symbol, Self-Inflation, and Anti-Semitism will be discussed later in the discussion section.

Discussion

The element of the white supremacist ideology definitely make their way into screen names. If they didn't the specific letter and number symbols wouldn't be found in roughly 1/8th of the screen names with a reliability of over 85%. The same can be said about the specific hate groups. As for heritage, we probably see the same high frequency on a website that dealt with something like genealogy. Heritage is an element that is specific to white supremacist. However we can determine that heritage is a valued entity for white supremacists with such a high

frequency and reliability.

The categories that were not statistically significant are probably due to the design of the code book. Picture symbol, as a category, was probably too vague. Besides that what is a white supremacist picture symbol? Even if it had been statistically significant it probably wouldn't have had much weight in proving that white supremacist ideology ends up in screen names. Self-Inflation probably failed also because vagueness. Many times a screen name would have something like "Offa Wermudsen" and in the explanation it would be learned that he was a king. Does that constitute Self-Inflation? The code book no judgement call on how "king" has to be used for it to be Self-Inflation. Anti-Semitism was insignificant probably because of the amount of overlap in the categories. Reference to "The Order" is definitely a hate group but is it Anti-Semitic? Yes, because the it is an anti-Semitic organization. No, because they aren't specifically anti-Semitic. It depended on the coder. The overlap of the categories made coding overly cumbersome.

Conclusion

The white supremacist elements make their way into screen names and the screen names are a way for the individual to indicate that they are part of the ingroup, as stated by SIT. The ingroup, in this case, has a violent ideology. White supremacist do not see a non-violent way of bringing about their reforms. The school shooting Red River on March 21, 2005 had a link to white supremacist websites. The shooter, Jeff Weisse, who was American Indian (not white by white supremacist standards), frequented white supremacist websites. Jeff's one screen name, "Native Nazi", was certainly adapted to for use within the white supremacist culture, as CAT would indicate, and exhibits two of the categories that we coded: heritage and hate group. Even though he wasn't white he was able to show his bond to the violent ideology by his screen name. However, actions speak louder than words, and it could be the case that in order to identify with the white supremacist more he would act on the ideology rather than just talk about it.

The Red River shooting wasn't the only violent act where the assailants had an association with white supremacist groups. Eric Harris and Dylan Klebold of the Columbine shooting were also regulars on white supremacist websites and even had the symbol of the iron cross on their infamous trench coats. Timothy McVeigh, a follower of white supremacist groups, especially after reading "The Turner Diaries", and on 4/19/1995 (the day before Hitler's birthday) he bombed the Alfred P. Murrah federal building in Oklahoma City. Also, Eric Robert Rudolph, accused of the Olympic Park bombing, an attempted lesbian night club bombing, and two abortion clinic bombings, believe in the ideology of the Christian Identity, a white supremacist group that believes that whites are God's chosen people. It is nothing new that the white supremacist ideology is violent. What is new is the internet and its ability to strengthen the beliefs of the white supremacist, giving them more of a social identity to bond to and act upon. With this stronger tie to the ideology, and the virtual support of the whole online white supremacist community, it makes it more likely for an individual to pull off an act of violence. One of the keys to this tie is the screen name. Like a newly elected pope gets to choose his name to link him to the Christian faith, a forum member on the Stormfront.org gets to chose his name to bond him to the white supremacist faith.

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Appendix A

Code Book

Screen names were counted more than once if it contained elements of more than one code. The user of the screen name's explanation was used to code the screen names in order to remove the coder's interpretation.

Heritage

The coding for heritage was constructed intuitively. Any reference to a heritage was counted. This heritage could be the users or one that the user admires. This includes references to German, Celtic, Nordic, Gaelic, Southern, and white heritages. "CNY German-American" is an example of this category.

Patriotism

Coding for patriotism was designed to include any reference to patriotism (usually American) was counted. This includes historical figures in American history. Examples of this include "proudamericanbyrd88", "Old Hickory" and "WhitePatriot14/88".

Self-inflation

Self-inflation was coded by looking at elements that boosted the ego or status level of that screen name's user. References to soldier, warrior, princess, and king are a few of the elements that were coded as self-inflation. "Tattooed Messiah" is an example.

Name

This code consists of screen names that the user claims to be based off their real name. "AWS18" (AWS being users initials) and "Doug" were counted in this code.

Media

Screen names containing elements that come from a media source such as TV, movies, books, or video games. "Ratspike" was counted in this code since the user stated that it was the name of a hate group in the video game "Shadowrun."

Hate Group

The name "Ratspike" was also counted in the category hate group since it refers to a hate group. Any reference to a hate group, real or fictional, was counted. This includes references to the Ku Klux Klan, Nazis, The Order, and others.

Anti-Semitism

Coding for Anti-Semitism was strictly limited to screen names that were described as having an anti-Semitic element. If the owner of the screen name didn't state that it was an anti-Semitic sentiment it is impossible to determine if it was chosen for anti-Semitism or hate for another group. Any derogatory ZOG or Zionist reference was coded as anti-Semitism. An example of this category is "Ann Frankenstein" because in the description the user stated, "I got sick and tired of the Jews with their holohoax whining and telling me about some Jew ho named Anne Frank."

Picture Symbols

Picture symbols were coded more liberally. Any reference to a visual object or effect that had symbolic meaning was coded. This included "Mantis", "Tiger", and "burntodeath".

Letter or Number Symbols

White Supremacists have many letter and number symbols that are not well known to the outgroups. For example, 88, the 8th letter of the alphabet is "H", 88 symbolizes HH or Heil Hitler. 18 is much the same, "W" for white. Among the most common is 14, which stand for David Duke's 14 words, "We must secure the existence of our people and a future for white children." An example of a letter symbol is ORION, "Our Race Is Our Nation." Screen names coded here include: "coyote88" and "Aryn420".

The Case Against Reductionism
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Recent philosophical, neuroscientific and psychological work in the study of mind has brought about many attempts to figure out what the right theory should consist of. Should researchers pay attention to the brain alone or should they also take into consideration the subjective aspects of consciousness? The debate has been long and heated and volumes have been written on what the correct theory of mind should be. Patricia Smith Churchland, among others, has supported a reductionist theory. This theory wants to establish that all consciousness can be reduced to neuronal activity, or more simply, that all consciousness *is* neuronal activity. This reductionist strategy that P.S. Churchland endorses cannot ultimately explain the whole of consciousness because it makes three mistakes: it assumes that what is true of the parts is true of the whole; it completely disregards the subjective aspect of consciousness, and it mistakes what should be considered a causal relationship between brain and consciousness to be an identity relationship.

Before an appropriate analysis of reductionism can be made it is necessary to outline the theory as P.S. Churchland explains it in her article “Can Neurobiology Teach us Anything About Consciousness?” First of all her belief is that all that there is to know about the brain will become known through neuroscience. All of the things that are now in the realm of psychology will eventually come to be understood by neuronal firings in the brain. Anger, pain, joy, depression, me trying to do philosophy, and just about anything that we place in the realm of the mental will be reduced to physical phenomena in the brain (hence the name reductionism). Churchland also believes that all attempts to figure out what the mind is doing through philosophy should be abandoned because what the mind is doing is an empirical matter alone. The proposed method for doing this research is what she calls “reverse engineering.” We take a thing apart to figure out how it works. Scientists would be studying different aspects of conscious experience such as sensory experience, emotional experience, etc., and then going back to put all these things together to see how the whole system works. (127-29).

That was just a basic overview of reductionism. Most of the aspects proposed by this theory are quite valid. There is nothing wrong with trying to figure out the inner workings of the brain. This type of research has given us valuable insight on a lot of different aspects. We now know more things about how sight works, how the emotions affect us and our reasoning, some of the causes of mental illness and ways to treat it, and a number of different invaluable things. It would be foolish to say that neurobiological research cannot teach us anything about the nature of consciousness since it has already taught us many things. It almost seems as if P.S. Churchland is setting up a straw man by using this as the title of her essay. It makes anyone unwilling to accept this look foolish right from the beginning since most philosophers would accept that neuroscience has taught us much about consciousness. It belies the complexity of the philosophical arguments that are unwilling to accept neuroscience as the whole, or only, basis for understanding consciousness.

There are several reasons why reductionism cannot properly explain the full scope and complexity of consciousness and conscious experiences. The first mistake that P.S. Churchland makes in her discussion of reducing consciousness to neuronal activity is that she neglects to consider that the whole (consciousness in this case) cannot always be described by its distinct

parts (neurons). The whole is oftentimes greater than the sum of its parts, an idea that we can observe by looking at the world around us. You can say that music can be reduced to a series of individual notes or sounds. After all that is what the basic definition of music is, organized sound in time. But when someone makes this type of claim they undermine what those notes are when they are played together. Hearing these individual notes one at a time would be meaningless. You could also say that painting at its base is just a bunch of colors but then you would fail to acknowledge that the finished artistic result is greater than the individual colors. No one would say that the paint section at Home Depot is art. We say that humans are made of parts - arms, legs, a brain, and molecules at the most basic level. You can say that people can be reduced to their parts but when you do this you fail to acknowledge the true complexity of those parts when they are together. I think that consciousness is similar to this. The individual parts can be reduced to neuronal activity but when the whole comes together it forms something special and inexplicable by neuroscience alone. This something can make and appreciate music and art and speculate what it really means to be a human being.

The reductionist, P.S. Churchland in this case, might argue that this view is just misplaced and motivated by our own desire to believe that we are something more than we actually are. She might say that in the case of consciousness the whole does not really form something that is greater than the sum of its parts and that the analogy cannot be made with art and music in this instance. When you explain all of the neuronal activity and correlate it to conscious states, you will have explained everything. It is just a flaw in reasoning to believe that neuronal activity is not consciousness and that consciousness is greater than it.

This would not work for a couple of reasons. First of all she would need to explain why it is that the analogy does not work in the case of consciousness when it seems to work with other things that we see around us in the world. It can be said that the world itself is so complex that in the end it forms something that is greater than the sum of its parts. The next thing that she would have to explain is the reason why human beings should be capable of creating and interpreting art and music when it seems to be inessential for our survival. It can be said that these things came about through social interaction. This very point would prove that there is something outside of neuronal activity that is necessary to completely explain consciousness.

The next objection that can be brought against Churchland is that she completely leaves out the subjective aspect of consciousness and says that folk psychology can teach us nothing about consciousness. But there is something that it is like to experience different mental states. There is a distinct way that pleasure feels as opposed to how pain feels. Thomas Nagel characterizes this further by saying that for each organism there is something that its like to be that organism. (519). Folk psychology acknowledges these things and accepts these things, but reductionism completely ignores them. Not only does it ignore them, it makes the mistake of saying that there is nothing to learn from this and that the only viable strategy is a pure neuroscientific one. It is a mistake to disregard folk psychology because what the researcher is doing by that action is ignoring their starting point. The reason why scientists started to study the physiological causes of depression is because there were a number of unfortunate individuals describing how awful it was to be in this mental disposition. Telling people who are depressed that what they feel is an abnormal neuronal activity does not make the depression go away. There is something to be learned by the subjective. I can learn everything physiological about depression, but I will still have no clue about what it is like to be depressed unless I have been in the state myself or I have read a subjective account of what it is like to be depressed. The physiology is only half of the story. Without the subjective description of folk psychology the

story is incomplete.

In his essay “Prospects for a Unified Theory of Consciousness” Owen Flanagan proposes a research strategy that might give us the full picture. He calls this the natural method of consciousness. This method involves taking into account three different ways of looking at consciousness and eventually putting them together to establish a unified theory. He says that the first thing that needs to be taken into account is the subjective account of consciousness, how things feel. This would take into consideration the everyday reports of people on the way that mental states seem as well as work done by philosophers based on introspection. The second thing that such a theory would take into account is the work done in psychology. Flanagan says that this would include reports about how mental life works and the role of consciousness in that mental life. The last aspect of the theory would include the work being done by neuroscientists. This takes a look at the inner physiological workings of the mind. When reports from all three match up we will have a unified theory of mind (100-101). This method seems to be the best at the moment. We need all the tools that we can get to properly understand consciousness and it is much too early in the game to say that some should be disregarded in favor of others. Even if neuroscience explains 99% of consciousness, there would still be something missing. The reductionist strategy of Churchland will not provide the last percent but the unified theory of Flanagan might.

The final objection against P.S. Churchland is that she makes a mistake in thinking that the relationship between conscious states and brain activity is an identity relation rather than a causal one. She says that identity relations in science are much easier than causal ones and cites examples of places where they have worked. The examples that she gives are electric current, heat and heredity. Electric current *is* the movement of electrons; it is not *caused* by the movement of electrons. The same thing can be said about heat and heredity. Heat is molecular motion and DNA is heredity.(132). From this she draws the analogy to neuronal activity and conscious states. She says that neuronal activity does not *cause* a conscious state but that it *is* a conscious state. Any mental state that we experience is not caused by the firing of neurons; it simply is the firing of neurons.

There are several reasons why this claim is unwarranted. The first of these is that not all of the relationships that we have in science are identity relationships. This is especially true with relationships in the body. The contraction and release of muscle fibers in the legs *cause* the subsequent motion of the body but they are not motion. The contraction of the heart *causes* the blood to pump through the body. Also, while it is true that DNA in essence, simply is heredity (or rather, the way that heredity is passed on from generation to generation), it is also true that it has some causal power. It causes the different traits that individuals exhibit. These traits are not DNA but are caused to come about because of it. These examples do not prove anything by themselves because it can still be argued that the consciousness/neuron relationship is different than the example described here. The bigger problem that the reductionist has to explain is this: at many subconscious levels of the brain’s neuronal activity *is causing* things in the body to happen. Neurons are regulating breathing, heart rate, digestion, and just about a million other things in causal relationships. The firing at one part of the brain is causing something to occur in the body. This brings us to the next logical question, how is it that the firing of neurons in one part of the brain *cause* things to happen while the firing of neurons in another part of the brain *are* things (mental states)? It does not make any sense.

All of these factors come together to show that reductionism is not the complete theory of mind that P.S. Churchland and others believe it to be. The mistakes that it makes are numerous. It

fails to consider the relationship of the parts to the whole and to accept that there are some things that are inaccessible to neuroscience, mainly the way it feels to experience certain mental states. No one denies that neuroscience is invaluable for the study of consciousness, but it should not be the only thing taken into consideration. Finally, there is a mistake in reasoning when an identity relationship is assigned to the brain and consciousness when it does not exist for the brain and other physiological functions.

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Character, Goal, Causal, and State Inference Generation during Text Comprehension

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Abstract

According to text comprehension models, readers create a variety of inferences during comprehension (Graesser, Swamer, Baggett, & Sell, 1996). It has been stated that inferences require the use of real world information and reasoning to understand information. In this study 86 participants read 12 narratives aloud, pausing five times to state everything they were thinking. This procedure is called think-aloud. Each participant's think-aloud session was tape-recorded, transcribed, and then content analyzed for 21 inference categories. On average, each participant generated 6.15 inferences for each of the 12 stories. Factor analysis was used to identify the structure of inferential processing: yielding three robust factors: character-internal, causal and state inferences. Character-internal inferences are character thoughts, goals, and emotions; causal inferences are associated with the cause of events; and state inferences are physical aspects. Of the total inferences 43% were character-internal, 40% causal and 17% were state. The difference across the inference categories was significant, primarily because there were fewer state inferences on average.

Background and Goals

There are many different ways to examine the reasoning behind processing of written language, and how this processing results in comprehension. The mental model, for example, is a mental representation of the situation or event in the story (Radvansky, Copeland & Zwaan, 2003; van Dijk & Kintsch, 1983). According to mental model approaches to language comprehension, comprehension is driven by the psychological desire for readers to create a mental representation of the meaning of the content of the story (van Dijk & Kintsch, 1983). All of these theorists contend that inference generation is an important component of mental model construction.

People generate a variety of inferences when reading, leading to local (verbatim) and global (mental model) levels of understanding (Graesser et al., 1996; Garrod & Pickering, 1999). When reading stories, people focus on actions performed (subordinate goals) in pursuit of specific goals (superordinate goals). In addition, people focus on a character's thoughts and emotional reactions to events in the story (Graesser et al., 1996). Graesser et al. (1996) state that the most common inferences generated during reading are those pertaining to goal, causal, and state information.

Research on inferential processing have focused on (1) one inference type at a time, (2) memory for inferences, or on (3) reaction time to inference-related information, rather than on global inferential processing at the time of reading. Radvansky et al. (2003) found no differences in memory for spatial inferences in young and older adults. However, it should be noted that Radvansky and his colleagues only examined spatial inferences which were not considered one of the most common inferences generated during narrative processing. His approach is actually similar to several memory and reaction time studies which have typically examined one kind of inference at a time.

Studies have also been done on verbal processes and aging with some of these focusing on inference use (Cohen, 1979; Light, Valencia-Laver & Zavis, 1991; Zacks & Hasher, 1988; Zelinski & Miura, 1990). These studies suggest that aging may not be associated with comprehension deficits and inferential processing deficits in older adults. However, these findings are based on the results of cross-sectional studies in which the average age of the older adult participating was around 70. Not much is known about verbal processing changes in adults over the age of 75.

The present study was performed to examine inference generation across all categories of inferences. We examined the most common inferences generated during a think-aloud, non-timed situation when people are instructed to talk freely about anything that the story brought to their minds. This study will also examine age differences across inference categories, particularly as these differences pertain to adults 75 years of age and older.

Method

Participants

Eighty-six adults, ages from 18-87 participated in this study. There are three age ranged groups, young adults 18-35, n=31, young-old adults 65-74, n=27, and old-old adults 75+, n=28. Education levels were very similar across the age groups, young adults 14.45 years, young-old adults 14.26 years and old-old adults 14.57 years of total education. Young adults were undergraduates who participated for course credit. Older adults were recruited through students and through community centers.

Procedure

Participants read 12 narratives consisting of about 150 words per narrative. The passages were modifications of those used by Daneman & Green (1986). Each narrative described a problem that was resolved by the end of the narrative and contained an unfamiliar word with enough information in the passage to determine the meaning of the word (See Table 1 for an example of a narrative). Each narrative was broken into five parts having the participants pause at each part to than describe everything they were thinking after reading the passage. The participants were encouraged to respond at all of the five breaks. This was the think-aloud process.

Content Analysis

Each participant's think-aloud session was tape-recorded and transcribed. Each inference was identified and categorized for one of the twenty-one inference groups (See Table 2). During the coding process the coders did not have access to any background information of the participant because the transcribed think-aloud was only labeled with the participant's number.

Inference coding proceeded in two phases. In phase one, two coders highlighted inferences and met to compare and discuss discrepancies. During phase two, the highlighted inferences were categorized according to the list in table 2. Coding discrepancies were counted and were less than 5%. A third coder resolved discrepancies or deleted inferences that were too ambiguous, but the latter was a rare occurrence.

During data analysis, each participant was limited to no more than two inferences of the same type per passage (e.g., the inference counts for any one inference type never exceeded 24). This process was used to prevent any over-representation of participants who generated large quantities of inferences.

Table 1

Sample of a Think-Aloud Narrative

Johnson had held his present job since 1989 but in the past year there had been a number of complaints. After his superiors investigated, Johnson was fired for dippoldism.

When his superiors found out what Johnson had been doing at the school where he taught they were quite disturbed. In some cases, the welts had taken a long time to heal.

Many of the victims had broken rules and disciplining them was within Johnson's duties, but his method had injured a number of them. This practice, although once fairly common, was no longer considered acceptable.

Even though most of them had been too scared to complain about someone they were supposed to obey, eventually the story came out and Johnson was fired for dippoldism.

Johnson's replacement put more emphasis on learning than on discipline and there was general satisfaction among parents with the decision.

Note. Lines indicate where participants were instructed to pause to think-aloud. Dippoldism is a real word that means *beating or whipping school children*.

Table 2
Inference Code and Inference Type Descriptives

Inference Type	M	SD	Description
Causal–Antecedent	7.60	3.83	Assumed cause of an explicitly stated action or event
Causal–Consequence	6.78	3.75	Likely or actual consequence of action or situation
Goal–Subordinate	2.27	2.05	“I want to do A to achieve B” A = subordinate goal
Goal–Superordinate	3.88	2.91	“I want to do A to achieve B” B = superordinate goal
Goal–Obstacle	0.29	0.57	Something that prevents a goal's expected end
Character–Thoughts	7.85	5.46	A character's thoughts (ideas, knowledge, beliefs)
Character–Emotions	4.42	3.51	A character's emotional reactions (e.g., scared)
Character–Activities	3.38	3.45	A character's current activities (e.g., he was reading)
Character–Role	2.12	1.95	Social and work roles (mother, co-worker, cashier)
Character–Traits	4.13	3.41	A character's personality traits
Character–Physical	2.24	2.10	A character's physical characteristics (e.g., tall)
Time	1.43	1.44	Mentioning time and duration
Place	2.14	1.97	Mentioning place or setting
State–Object	2.71	3.04	Mentioning object's state or properties
Instrument	1.16	1.21	An object used to achieve an explicitly stated action
Instantiation	11.92	4.65	A general explicitly stated category or action
Superordinate	3.03	2.23	A subordinate example or superordinate action
Thematic	0.77	1.17	Summary, mood, or an analogy of overall plot
Quantification	0.79	1.06	Frequency or typicalness of activities or events
Personal Experiences	2.00	2.36	Mentioning related personal experiences
Personal Reactions	3.63	2.95	Mentioning personal reactions to narrative situations

Note. Descriptives pertain to the average across all 12 narratives. The averages were obtained from adults ages 18-87 (N = 86).

Results

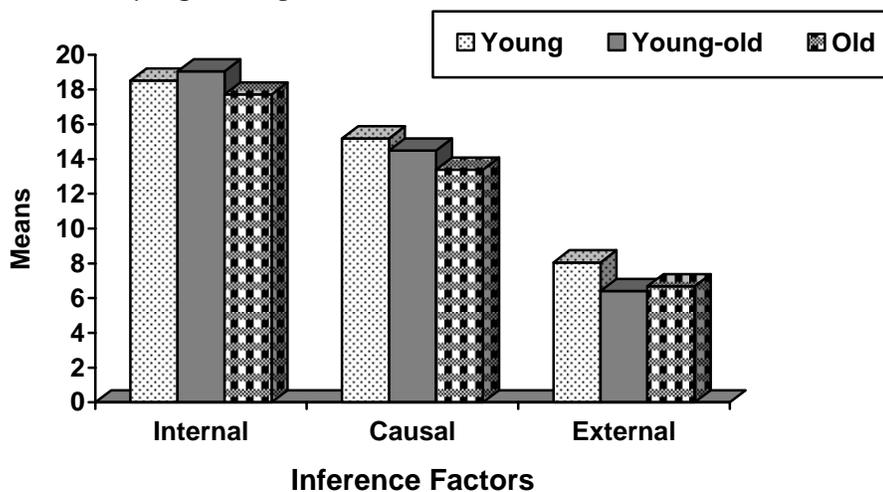
A factor analysis yielded three frequently occurring inference types: character internal, character state or physical and causal inferences. Character-internal inferences were goal superordinate, goal subordinate, character thought and character emotion. Character state or physical inferences were character physical, state object and place, and causal inferences were causal antecedent and causal consequence (See Table 3). These factors explained 71% of the variance among these items. Of the total inferences 43% were character-internal, 40% causal and 17% were state. The fewest given inferences by the participants were goal obstacle, thematic and quantification, all less than one total for all twelve passages: means are provided in Table 2.

Table 3
Factor Structure of Frequently-Occurring Inference Types

Variable	Character Internal	Character State or Physical	Causal
Goal Superordinate	0.851		
Goal Subordinate	0.809		
Character Thought	0.778		
Character Emotion	0.754		
Character Physical		0.792	
State – Object		0.748	
Place		0.710	
Causal – Antecedent			0.843
Causal – Consequence			0.834

Note: These factors explain 71% of the variance among these items.

Figure 1
Inference Means by Age Groups



There was main effect shown for inference type, $F(2, 166) = 57.71, p < .001, \eta^2$. A post-hoc t-test and all post-hoc mean comparisons for inference categories were significant $p < .001$

using a Bonferroni correction to control alpha. There was no significant difference for age group, $F(2, 83) = 0.328$, $p = 0.821$, and no significant interaction of inference type and age group, $F(4, 166) = 0.209$, $p = 0.933$. The age group means are depicted in Figure 1.

Discussion

We found that the most common inferences in participant think-aloud protocols were character-internal, causal, and state inferences. Our findings are consistent with the theoretical positions regarding mental models: that readers use information pertaining to events, characters, setting and meaning of the story and they are mentally significant during comprehension (van Dijk & Kintsch, 1983). Our results are also consistent with Graesser et al.'s (1996) theoretical model pertaining to categories of knowledge-based inferences. They stated that the most common inferences generated by participants reflect goal, causal, character emotion, and state information.

No statistically significant age differences in the amount or type of inferences were obtained, suggesting that older adults engage in the same kind of inference and mental model processes as younger adults. This was consistent with Radvansky et al. (2003) who also found no significant differences in spatial inference processing in young and older adults. There were also no education differences among the three age groups which could have presented a cohort confound if there had been.

At present, we are conducting a study using a think-aloud approach with different stories. In this study, the texts do not include an unfamiliar word to see if unfamiliar word processing had affected inferential processes. Additional studies could be performed with figurative or metaphoric language to see if there are any differences in the types of inferences given and whether age differences arise in different comprehension scenarios.

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Visions of Grandeur: The Sad Life of Nick Bottom

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The character of Nick Bottom is usually portrayed as a silly, buffoonish man. He is an easy going braggart that takes life as it comes. Although Shakespeare doesn't say so, it is easy to imagine that Bottom is a large and loud man. This is also the way he was portrayed by Leon Rubin in his 2004, Stratford stage production of *A Midsummer Night's Dream*. This would help to understand as to why his fellow artisans looked up to him. To enhance his silly nature, he wears a donkey's head in the play and Shakespeare simply states that he becomes a donkey, when he is enchanted by Puck. By covering his head, the audience does not have to deal with a feeling human and he can continue to entertain with his silly antics. This is not so in the Michael Hoffman's film version of *A Midsummer Night's Dream*. We get to see Bottom's face and especially his eyes, so he will remain a feeling being to the audience. The character of Bottom takes on a completely different personality with a sensitive and thought provoking performance by Kevin Kline. Hoffman and Kline portray Bottom as a sensitive, daydreaming, and sad man. He is not the largest male in the group and although loud, his voice does not bellow. He will not jump to fight with his peers if they do not agree with him (Hoffman film). All he needs to sustain him is a small amount of encouragement, but his bubble can be burst with a single action. He is a man who wants so much out of life, but is trapped in a world that he can never escape.

When Hoffman introduces Bottom for the very first time, he is sitting in a café sipping an espresso. He is dressed in a white linen suit with a straw hat and carries a cane which would lead one to believe he is of a higher station in life. Hoffman uses another visual here with the head of Bottom's cane. It is a skeleton head, showing that there is a dead life in the person of Nick Bottom. With the appearance of his wife we get our first glimpse of how trapped this man really is. A pretty girl has just given him a flirty little smile. This perks him up and he smiles back. She thinks he is someone special and his confidence is raised. The bubble is burst as his wife appears looking for him and calling him a lazy, no-good. Hoffman introduces this back-story without interfering with the original Shakespeare play. He achieves this by having her as the only character who speaks in Italian with subtitles (Thum 10-26). As Bottom hides from her we see that reality has set in. She is his life and no matter what he does there will never be any encouragement or pride from this woman, although we must wonder if he was the one who made her this way through his visions of grandeur (Hoffman). The dreamer will attract a woman but after the first few disappointments the magic turns into to hardness.

Although the artisans are not professional actors, Bottom makes sure that Peter Quince calls the role in a very formal fashion. In doing this we are able to see how he is legitimizing the dream by making it appear real. Through his dress and actions, his fellow artisans would naturally look up to him. They are "regular guys" and although he is one of them, Bottom dresses better and can through his manner of speech and actions rise above their class. When the title of the play is announced, Bottom shouts out that it is an excellent play. "A very good piece of work, I assure you, and a merry" (Shakespeare 1.2.13-4). His persona is one of an educated and talented man who is just a little bit better than they are. They do not catch on that Bottom has no idea what the play is about, because he must ask Peter Quince what kind of character Pyramus is. "What is Pyramus? A lover or a Tyrant?" (1.2.19). They want to have the white suit and own a bike (Hoffman allows for Bottom to be the only artisan we see with a bike) and

although it would appear that he feels he is above them, Bottom shows his friends the courtesy and respect by addressing each one as “master” (Hoffman). Hoffman makes sure that the audience, along with the artisans, like this man, and everyone wants him to succeed.

As the artisans are given their parts, Bottom, of course, is given the lead. It is the first time that we see that Peter Quince knows what is behind the mask; he knows what desperation lies in his friend, Nick Bottom. As each man gets his part, Bottom begs for that part also. As he is asking for the parts he goes into great detail on how he can improve on the performance and then gives examples (Hoffman). Although most people would think this is something born of arrogance, it is just as possible that he is terrified. While, it is true he is playing the lead, a hero, he must also believe that there is a chance that the part of Thisbe or lion could steal the show. He needs the limelight and without it he could not satisfy his special need for his unattainable greatness.

As Bottom goes over his lines in the village square, a crowd begins to gather. He is enchanting the women and children. He has them eating out of his hand. This is his true calling, a man above all other men. To this audience there is no one else. It is not a feeling that will last for a very long time. Hoffman could have had Bottom’s wife appear at this moment and embarrass him, but he chooses to take the humiliation a step further. Hoffman first intended to have the boys drop donkey manure over Bottom, but in the end it is wine that causes the humiliation (Harper Entertainment pg.16). When the two boys pour the wine over him, everything is lost. He is mocked by the once adoring audience. He retreats into the background to hide his shame, but he continues to sneak glances to the place his admiring audience once stood. He cannot even muster up anger at the boys; this is how great the shame is. His dreams are drowned in that wine. It is Peter Quince, wonderfully portrayed by Roger Rees, who comes to his side and knows his friend needs special coaxing. Quince convinces Bottom that without him all will be lost. “You can play no part but Pyramus; for Pyramus is a sweet-faced man. A proper man as one shall see in a summer’s day, a most lovely, gentleman-like man; therefore you must needs play Pyramus” (1.2.76-9). He must even place the script in his friend Bottom’s hand and Bottom reluctantly agrees (Hoffman). Through these words, Hoffman has had his actors show true friendship between the two men; Quince, understanding the need for encouragement and Bottom, deep desire to be saved from the bowels of his life.

As we watch Bottom sadly returning home, the operatic music plays with its mournful tones in the back. In it we hear, *una furtive* (one secret) and *una lacrima* (one tear) and if the scene itself was not enough to have the depths of the audience’s souls break, the music brings everything crashing home (Thum 10-26). As Bottom goes quietly into his house, we again see his wife. As she looks at this man who she is forever bound to, we see the look of revulsion, disgust and pity in her eyes. Bottom returns her look with one of such utter shame and helplessness that for a moment you are pulled into his world of hopelessness. It is just an assumption, but more than likely Bottom’s wife will do her best to get the wine stains out of her husband’s ruined suit. He may be a good-for-nothing dreamer, but he is her husband. We see this when Bottom’s wife’s lips turn up in the faintest of smiles. It is only for a brief moment, but if you allow Hoffman to help you look very closely, you are allowed to see that just for a second, she remembers why she loved this man (Hoffman). By adding this back-story of Bottom’s wife, Hoffman has drawn us into Bottom’s real life and the true nature of his character and his relationships through looks and silent scenes in a way that the stage version of the play cannot.

Hoffman uses other silent scenes and visuals to inform his audience of Bottom’s true character and of what adventures are going to befall him. To show his character, Hoffman uses

Bottom's beard as an excellent visual. In the café and when he is performing in front of the crowd, Bottom's beard is a darker shade of brown. After his humiliation with the wine, Bottom's beard takes on a different hue. It appears to have quite a bit of gray hairs in it, thus giving him the appearance of being an older, tired man (Hoffman). This allows the audience to see his total defeat; one in which a vigorous man becomes old.

Hoffman also gives the audience subtle hints of what is going to happen to this man with his continuous references to the donkey. Before we see Bottom for the first time, as we are reading the poster announcing the competition for entertainers at the Duke's wedding, a donkey walks across the scene and immediately the camera moves to Nick Bottom as he sits in the café. The second hint is when the artisans are being given their roles in the play. As they are teasing Francis Flute because he is to play the part of a woman, the artisans begin to laugh uncontrollably and in the background the audience hears a donkey clearly braying. Hoffman gives us the last hint when Bottom finds the cane that Puck has left for him. A donkey's head adorns the handle and it is the first time Bottom is clearly shown his fate, although he doesn't understand it (Hoffman). With these subtle hints, Hoffman prepares the audience for the adventure that is to befall his hero.

When the artisans meet in the woods for their secret rehearsal, Bottom appears in his everyday work clothes. It is Hoffman's way of making the audience aware that Bottom owns only one suit, because if he had another one, he surely would have worn it. Bottom uses this opportunity to show his friends what a problem solver he is when he comes up with solutions for the moon and the wall. This also reaffirms to the audience why his fellow artisans admire him so much. He takes his performance so seriously that he goes off by himself to rehearse. There as he is alone, he finds the top hat and cane with the donkey head handle that Puck has left for him. He immediately tries it on and starts his transformation. What Hoffman has done differently is not to change Bottom's entire head into that of a donkey. Bottom gets the ears and a somewhat fuzzy appearance and his voice changes into something with braying undertones. In doing this the audience still knows that there is a human quality to Bottom and they are allowed the advantage of seeing his facial and eye expressions. When his friends run off in fear at the sight of him, Bottom says he doesn't care and will sing to prove to them that he is unafraid. A different picture shows though. Unlike the Bottom in Rubin's play, who strutted about confidently, the Kline character with his sudden eye movements and the quiver in his voice shows a man who is very afraid (Hoffman). Nothing goes well for Hoffman's Bottom for any period of time and it is easy to see with Hoffman's help that he thinks this time will not be any different.

Hoffman suddenly transports Nick Bottom into the world of the fairies and while we wonder how Bottom could have been standing there and not notice Titania's bed hanging over his head, Hoffman does his job and explains this to us at the end of the sequence. When Bottom is transformed back into human form, he lands upon the ground and finds the bird's nest with what appears to be a golden ring. It is then that everything becomes very clear; during the time Bottom stood alone in the forest, he was transformed into the small world of the fairies. The bird's nest was Titania's bed and the "little ring" was the golden crown that Titania had given him. Hoffman separates the fairy world from the real world in another defining way. The entire time that Bottom is among the fairies he is no longer wearing his wedding ring, and as soon as he falls from the bed it is again on his finger (Hoffman). In doing this, Hoffman makes the fairy world sequence into a truly magical period in Bottom's otherwise humdrum life and succeeds in totally separating the two worlds.

The fairyland sequence is also important for Bottom because it is during this time that he is given the opportunity to be loved and to feel important. As he performs the rather simple task of playing a record, the awe and admiration of Titania and the fairies is obvious. Bottom has achieved something he would never achieve in his normal life; he has made a beautiful woman proud to be sitting by his side. Hoffman uses laughter and the looks of utter joy and happiness to give his characters the feelings of new and undiscovered love as Titania and Bottom make love in her bed. Even the location adds to the magical experience as the bed is lifted up and sits above the world of ordinary activities. Before he goes to sleep, we see that Bottom is becoming his old self. As he asks for food and tells Titania not to let anyone bother him as he sleeps, the tones of false importance are starting to seep in. "But I pray you, let none of your people stir me; I have an exposition of sleep come upon me" (4.1.37-8). He even wraps his arms around her legs in a familiar way, in the position of a loving couple who are comfortable with each other (Hoffman). In doing the scenes in this manner, Hoffman is able to bring the audience and Bottom back to the man he started out as, but with a life changing difference.

The artisans sit in complete defeat, because without Bottom they feel lost. He is their star and their inspiration. This is important in showing that the tide is turning. Bottom is not a complete failure. There are people who admire him and depend on him. These are true friends and when he appears, he is just as glad to see them as they to see him. He immediately encourages them and tells them what to do concerning the lines and costuming. During the artisans' performance before the wedding couples, Hoffman manages to have Kevin Kline give his "worst" performance. Bottom is the complete "ham". But it is as if he alone has brought out the best in these friends; some of them, such as Francis Flute give the performance of their lives. Flute even brings the audience to tears. Their success with the Duke is through Bottom's inspiration and encouragement (Hoffman). Through overacting and pure satire, Hoffman has shown that no man is a failure when he has true and loyal friends standing beside him.

After the glory, Bottom returns to his lonely existence, where Hoffman shows us just how distant Bottom and his wife truly are. They do not share a bed. Bottom stands in the bedroom completely alone. He has his medal from the Duke, though, and he hangs it proudly on the bare wall of his bedroom. Then as he reaches into his pocket, he finds the tiny little crown and thoughtfully turns it through his fingers and contemplates the meaning it holds for him. At this moment, Titania flutters outside the window as a bright fairy light and Bottom smiles. Although all is despair and sadness in his life, for a moment he was loved and that memory will sustain him throughout his life. By having Titania appear as only a light, Hoffman keeps the vision and existence of Titania a magical aspect in Bottom's mind and heart (Hoffman). Through Hoffman's direction and vision, we see that Bottom is inspired to keep hoping through his dreams and fantasies. We see that sometimes, the dreamer in all of us wins out in the end.

Michael Hoffman succeeded in taking a buffoonish, comical character and turning him into a character that made people sit up and take notice. We, the audience developed feelings for him, and he in turn broke our hearts. Through our pity, we hoped he would find what he was looking for. As we watched his flamboyant nature and smiled at his antics, we learned that there was a fragile human inside of that soul. As we watched this persona of arrogance, Hoffman opened our eyes and we met a humble man. What started out as one of the saddest of men, ended with a man who would continue to have his dreams and hopes. He was able to do this through the back-story of Bottom's private life and through his portrayal of Bottom's friends and his dreams. Hoffman gave Bottom the type of friends that everyone should have: those that depend on, admire and support you. Most importantly, Hoffman showed that Bottom's

dreaming wasn't entirely a bad thing; after all, it gave him the love of a beautiful fairy queen. Hoffman has left the audience feeling secure that Nick Bottom, no matter what his trials in life will be; will always have his memories.

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Proliferation of Embryonic Stem Cell-Derived Neural Cells and Their Growth in Biodegradable Scaffolds

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Abstract

Embryonic stem cells (ESCs) derived from the blastocyst have the ability to differentiate into any cell type. Since ESCs mimic early embryonic development and have not yet fully developed cell surface immune responsive antigens, they can be used as a renewable resource for tissue engineering or direct transplantation to repair, regenerate or replace damaged tissues resulting from cardiac failure and bone fractures. In addition, they may be implanted to mitigate the effects of certain diseases such as Alzheimer's, Parkinson's and multiple sclerosis. The goal of our research is to develop ESC derivatives and to engineer tissues *in vitro* that can be used for research and therapeutic purposes. In this study we developed culture conditions for directing ESCs into progenitors of neural lineage. The neuronal progenitors were then directed to differentiate into enriched populations of either neurons or oligodendrocytes. Both types were distinguished based on the morphological features of the differentiated cells. Molecular analysis of the ESC-derived cells showed that they lacked Oct-4 but expressed NeuN or O-4. The neuronal progenitors were also seeded into scaffolds especially designed by blending polycaprolactone and polyethylene oxide. The ESC-derived neural cells proliferated and rapidly colonized the scaffolds under the tested culture conditions. The scaffold grown cells also expressed neural markers as judged by immunohistochemistry and RT-PCR analysis. Further studies are underway to investigate the potential of ESC-derived neural cells for transplantation to regenerate neural tissues *in vivo* using a mouse model system.

Introduction

Embryonic stem cells (ESCs) are pluripotent self renewing cells which are derived from the inner cell mass of the blastocyst. They have the ability to differentiate into any cell type of the three germ layers, namely ectoderm, endoderm and mesoderm (4). ESCs lack cell specific antigens and may not produce an immune response if they or their derivatives are used for *in vivo* transplantation (6, 7). Therefore, there is great potential for designing and developing ESCs-derived tissue grafts that can be implanted to repair, regenerate or replace damaged tissues. For example, neural cells and tissues could be used in transplantation therapies for mitigating the effects of neurodegenerative disorders and diseases such as Parkinson's, Alzheimer's, and multiple sclerosis as well as spinal cord injuries (8). The central nervous system (CNS) is one of the most sophisticated and intriguing systems in animals. Even though an established number of neurons exist in an organism, they do not normally regenerate (9). This research is aimed at

developing technologies to generate neural cells and tissues *in vitro* that can be grafted for *in vivo* therapies. In previous studies we have shown that ESCs can be differentiated into osseous tissues (1). In this study, differentiation of ESCs into neuronal progenitors which further differentiated into mixed cultures of neurons, oligodendrocytes, and astrocytes has been achieved. In addition, neuronal progenitors were seeded into biodegradable and biocompatible scaffolds fabricated using polycaprolactone and polyethylene oxide. Electron microscopic studies of the seeded scaffolds have shown that the neuronal progenitors colonized and proliferated inside the scaffold.

Materials and Methods

Media and Cell Culture Conditions

Mouse ESCs were maintained on gelatin coated culture plates in Dulbecco's modified eagle medium supplemented with 10% fetal bovine serum, supplement (gentamicin, 0.1% streptomycin, 0.2% and penicillin, 0.12%) and 1000U/ml of leukemia inhibitory factor LIF (Chemicon) (1).

Preparation of Embryoid Bodies

Embryoid bodies (EBs) were prepared using the hanging drop method. Approximately 1000 cells per 20ul mouse ESCs (mESCs) were incubated at 37⁰C at 5% CO₂ on the inverted lid of petri plates for three days. The resulting EBs were then transferred to fresh petri plates and cultured with 10⁻⁷ M cis-retinoic acid for three days with a change of medium each day(1).

Differentiation of EBs to Neural Cells

The cis-retinoic acid treated EBs yielded neuronal progenitors when incubated in a selective neurobasal medium (5) containing commercially available mixtures of growth factors, B27 (5).

Seeding of Scaffold

The 3-Dimensional scaffolds were designed by blending polycaprolactone (PCL) and polyethylene oxide (PEO). Sections of the scaffold were cut into 1cm² areas and sterilized by gamma irradiation. The seven week old neuronal progenitors were seeded into 3-D scaffold (OPLA BD-Biosciences) by precisely teasing out the aggregates from the petri plates and placing them directly on the scaffold. After seeding the cells the scaffolds were suspended in petri plates with neurobasal medium.

Morphology and Histology Studies

To investigate the colonization and growth ESC-derived neural progenitors, the seeded PCL/PEO scaffolds were analyzed using Light Microscopy (LM), transmission electron microscopy (TEM) and scanning electron microscopy (SEM). In order to verify that neural differentiation had occurred in the tissue culture plates the cells were observed by immunochemical techniques following a published procedure (3, 4).

Reverse-Transcription-Polymerase Chain Reaction (RT-PCR)

To determine the expression of cell specific genes, the mRNA of the cells was isolated using an Rneasy kit (Qiagen). The isolated mRNA was subjected to analyses by RT-PCR (Qiagen) for visualization of the expression of neuro-specific markers for ESCs and neural cells. The amplified products were analyzed by 1.2% agarose gel electrophoresis.

Results and Discussion

Differentiating mESCS into neuronal lineage

Mouse ESCs incubated as hanging drops yielded tight rounded masses of cells known as EBs (1). When grown in the culture medium lacking LIF, the EBs differentiated into several types of cells including osteoblasts, myoblasts, neurons, etc. The EBs treated with cis-retinoic acid differentiated predominantly into cells of osseous and neural lineages. However, the cis-retinoic acid treated EBs, cultured in neurobasal medium and supplemented with B-27, differentiated into neural cell types and progenitors as judged by morphological features of the cells under LM investigation. The B-27 supplement is an optimized serum substitute developed for low-density plating and long-term viability and growth of hippocampal and other CNS neurons. In our studies it supported a long-term maintenance of the normal phenotype and the growth of neural cells for up to 10 days without the need for an astrocyte feeder layer. The B-27 has been shown to support growth of neural tumor cell lines without an astrocyte feeder layer (10). Light microscopy studies showed well round, compact colonies of mESCs (Fig. 1). Upon differentiation the cells became large with well developed cellular organelles (Fig. 2). These observations were confirmed by electron microscopic analysis of the differentiated neural cells. The neural cells were detected as early as three weeks of culturing the EBs. However neuronal progenitors were not observed until after 7 weeks of incubating the EBs in the neurobasal medium.

Characterization of neural cells

In order to investigate the expression of cell surface specific markers in both mESCs and differentiated cells, immunohistochemical studies were performed. The cells were cultured on glass slides pre-coated with gelatin. Neurobasal medium was then added to each plate. After three weeks had passed the slides were processed. Staining was done using primary antibodies against specific neural cell surface protein. These studies showed that anti-NeuN reacted with neurons and O-4 reacted with oligodendrocytes.

The use of light microscopy was crucial in detecting neural growth in the cultures. Light microscopy was done on a daily basis and pictures were taken after neural growth was detected. Analysis of the seeded scaffold showed that the cells lined the inner and outer surfaces of the scaffold as demonstrated by scanning electron microscopy (Figure 3).



Figure 1. Light micrograph of mouse embryonic stem cell colony after 3 days in culture. 200X.



Figure 2. Light micrograph of neural growth after 7 weeks in culture. 200X.

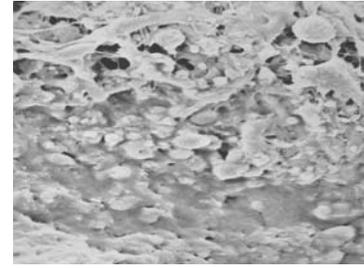


Figure 3. Scanning electron micrograph of neural cells growing on the scaffold after incubated for 1 month.

Agarose gel electrophoresis of RT-PCR products of mRNA isolated from embryonic stem cells and neuronal type cells showed that nestin and neurofilament genes were expressed by neurons and oligodendrocytes, respectively. Cells were identified based on their morphological features and immunohistochemical analysis. Nestin and neurofilament are cell specific markers for neurons and oligodendrocytes, respectively (2). The mRNA isolated from neural cells growing in the scaffold also expressed nestin and neurofilament genetic markers. The mESCs but not the neural cells expressed Oct-4 and alkaline phosphatase genes.

Our studies show the potential of readily differentiating embryonic stem cells into neuronal progenitors *in vitro*. While the differentiated neural cells have a limited life span, the progenitors were maintained for up to 10 passages without the loss of growth. In addition they were shown to colonize and grow when seeded into the biocompatible and biodegradable scaffolds. The scaffolds promoted proliferation, differentiation and organization of the ESCs-derived neural cells into 3-D structures. The initial findings suggest that neuronal progenitors may serve as a renewable supply of neural tissue for transplantation therapies.

Acknowledgement

The study was supported by the College of Art and Sciences Oakland University and Michigan Excellence Research Fund. The authors wish to thank L.T.N Dang for the TEM and SEM work and Courtney Biondi, Garrett Wilson, Jennifer Hopkins and Mahwish Hafeez for help in preparing this presentation. This study was supported by the REF grant from Oakland University.

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Occurrence of Vancomycin Resistant *Enterococcus faecium* in Amphibian Feces

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ABSTRACT:

Vancomycin (Vn) resistant *Enterococcus* was isolated from the fecal pellet of wood frogs (*Rana sylvatica*) on enterococcosal agar. These organisms were tested for resistance to ampicillin (Am), chloramphenicol (Cm), erythromycin (Em), gentamicin (Gm), tetracycline (Tc), and vancomycin(Vn). A high level of Vn resistance ($MIC \leq 512 \mu\text{g/ml}$) was found in Frog isolates. PCR was performed on the resistant organisms using primers specific for the genes *vanA* and *vanB*. The *vanA* primers produced an expected size amplicon of 1030 bp. The *vanB* gene was not amplified. The *vanA* amplicon from the frog *Enterococcus* showed sequence homology with the human *vanA* in homoduplex analysis. This indicates close relatedness of Vn- resistance genes in human and amphibian bacteria.

INTRODUCTION:

Enterococcus species is normally present in the gastrointestinal tract of humans and animals. It is an emerging pathogen carrying multiple antibiotic resistances that are responsible for causing urinary tract infections, community acquired (1-3), and nosocomial infections in humans (17). Infections due to antibiotic resistant *Enterococcus faecium*, particularly vancomycin resistance (VRE), are difficult to treat and are on the rise. VRE has been isolated from poultry, dairy farms (14), vegetables (10) and environments (13). The *van* resistance genes in these organisms have been found on plasmids and were transferable to other pathogens (4, 6, 26). More importantly, an amphibian *Enterococcus faecalis* isolate containing a *vanA* gene showed DNA sequence relatedness to a vancomycin resistant human *Staphylococcus aureus* (VRSA) isolate (22,29). The genes for vancomycin resistance operon are found on mobile transposable elements (28). There are currently six different vancomycin resistance (*van*) gene operons (*vanA*, *-B*, *-C*, *-D*, *-E*, and *-G*) mediating glycopeptide resistance (1-4,8, 24,25). The transfer of resistance among *Enterococci* is mediated by the acquisition of transposable elements by conjugal transfer of vancomycin (*vanA*) resistance via a mobile DNA element, such as Tn1546, which can be transferred to *Enterococci* by plasmids (27). In this study, we report for the first time isolation of VRE in amphibian feces. The amphibian VRE isolated in Michigan showed genetic relatedness with the vancomycin resistance operon found in human isolates.

MATERIALS AND METHODS:

Isolation and Identification of *Enterococci* in Frog Feces. Fecal pellets from wood frogs (*Rana sylvatica*) were dispersed in 2 ml of the brain heart infusion broth (BHI, Difco, Detroit, MI) and the fecal broth was incubated overnight at 37°C. A portion (0.10 μl) of the overnight growth in BHI was streaked onto enterococcosal agar (ECA, Difco) plates for the selective growth of *Enterococci*. The inoculated plates were incubated overnight at 37°C and isolated

colonies were picked, purified and identified by using Strep 20 ID (API system, bio Mererux). The identified colonies were stored at -70°C in 15% glycerol until further use.

Antibiotic Susceptibility Testing. The antibiotic susceptibility of *Enterococcus* strains was determined on cation adjusted Mueller Hinton agar (MHA), by the disc diffusion method, against six antibiotics and using the criteria recommended by National Committee on Clinical Laboratory Standards (18) The antibiotic disc ($\mu\text{g}/\text{disc}$) cartridges of ampicillin, Am (10 μg , R); chloramphenicol, Cm (30 μg); erythromycin Em (15 μg); gentamicin, Gm (120 μg); tetracycline, Tc (30 μg); and vancomycin, Vn (30 μg) were purchased from Becton Dickinson, Baltimore, MD. Confirmation of Vn resistance was done by E-tests (AB BIODISK) following the manufacturers instructions. The high level vancomycin resistant bacteria were tested against teicoplanin disc to distinguish between *vanA* or *vanB* type resistance. The Vn – resistant frog *Enterococcus faecium* isolates were also tested for teicoplanin (1 $\mu\text{g}/\text{ml}$) sensitivity alongside the *Enterococcus faecalis* ATCC 51559 (*vanA*) and *Enterococcus faecalis* ATCC 51299 (*vanB*) resistant controls, *Enterococcus faecalis* ATCC 29212 as sensitive controls.

PCR Amplification. DNA was prepared from the pure Vn resistant *Enterococcus faecium* isolate grown on an ECA plate. A single colony was picked and suspended in 50 μl of water in a 1.5 ml centrifuge tube, and heated in a Perkin-Elmer-Cetus Thermocycler to 95°C for ten minutes to release the DNA by thermal lysis of the cells. A portion (5 μl) lysate was used as template in the PCR reaction, which was carried out with *Taq* DNA polymerase (Invitrogen), forward primer 5'-ATGAATAACATCGGCATTAC-3' (positions 6018-6037) and reverse primers (5'-TTATTTAACGGGGAATC-3' (positions 8624-8607) sterilized water, in Easy Start 50 PCR tubes. Cycling conditions for the *vanA* primers were as follows: 94°C for 3 minutes, then thirty cycles of 94°C for 30 seconds, 55°C for 30 seconds, and 72°C for 45 seconds, followed by a ten minute extension at 72°C, and held at 4°C (17, 23). For amplification of *vanB*, we used forward primer 5'-ACGGAATGGGAAGCCGA, positions 169-185, reverse primer 5'-TGCACCCGATTTCGTTC , positions 815-799, expected size of PCR product 647 bp; accession number U00456/AF550667. The sequence similarity of amphibian vancomycin resistance genes with human was determined by homoduplex DNA analysis. Products were run on a 2% agarose gel using 0.1 M Tris-Borate-EDTA (TBE) buffer for 30 minutes at 130 volts. All PCR assays included *van* operon positive and negative enterococci control strains. The gels were then stained with ethidium bromide and visualized under ultraviolet light of wavelength. Digital photographs were taken using the UV Illuminator system and Gateway Computer.

RESULTS AND DISCUSSIONS:

Identification and susceptibility testing of *Enterococcus* species. Strep 20 ID strips were used to identify frog fecal isolates grown on ECA. All of the isolates tested were identified as *Enterococcus faecium*. These isolates were tested for antibiotic susceptibility against Am, Cm, Em, Gm, Tc and Vn. Gm was active against all the isolates tested. Ninety percent of the isolates were susceptible to Vn and Cm. Only 7.7% of the isolates were susceptible to Am and Tc and 30% to Em. A high level of Gm resistant *Enterococcus* species has been isolated from human and animals (11). Em resistance is also prevalent in poultry and human isolates (14). VRE is an emerging phenomenon in human and animal isolates. The indiscriminate use of antimicrobial growth promoters in farm animals is in part responsible for the selection of emerging pathogens.

In this study we have demonstrated for the first time isolation of Vn resistant *Enterococcus faecium* in wild amphibians. We have determined the MIC of Vn resistant isolates by an E-test and were found to be high (MIC>512µg/ml). *Enterococci* with high MIC against Vn has been isolated from humans and animals (16,27) and often mediated by *vanA* and *vanB* operons (19). The isolates conferring resistance to vancomycin via the *vanB* operon are susceptible to teicoplanin (5,7). The amphibian VRE isolated in this study were resistant to teicoplanin suggesting *vanA-mediated* resistance in these isolates.

Multiply antibiotic resistances. There is a cross resistance involving a combination of two and three antibiotics found in the *Enterococcus* species. For the combination of two antibiotics Am Tc (84%) and Am Em (8%). Vn resistance was found along with Em and Tc in 8% of isolates. Enterococci resistant to a combination of two or more antibiotics have been reported in human, avian and canine isolates (5). The multiple antibiotic resistances were transferable to *Listeria monocytogenes* (6), *Staphylococcus aureus* (22,29) and co-existence of VRE with *Clostridium difficile* (20). The plasmid mediated conjugal transfer of Gm and Em traits (26) and Em and Vn resistance have been reported (14-16).

PCR amplification of *vanA* and *vanB* genes. A total of five amphibians VRE were tested for the amplification of *vanA* and *vanB* genes using primers for *vanA* and *vanB* operon described in materials and methods. All five isolates showed amplification of a fragment of the *vanA* gene. The controls for *vanA* and *vanB* also amplified an amplicon for *vanB* and for *vanA* respectively (Figure). Similar transposons like elements have been described in humans and poultry VRE isolates (28). The sequence relatedness of the amphibian *vanA* gene with a human *vanA* was verified by homoduplex analysis. When an amplicon of amphibian *vanA* was mixed with an amplicon from *vanA* of a human isolate, after denaturation and annealing, it showed only one band of expected size. There was no relatedness detected when *vanB* amplicon was used with amphibian *vanA* amplicon in homoduplex analysis. These results demonstrate that the amphibian *vanA* gene is related to the human *vanA* gene. Final proof of the extent of the DNA sequence similarity will be obtained from the DNA sequence analysis of the amphibian *vanA* amplicon.

CONCLUSIONS:

Multiple antibiotic resistance to Am, Cm, Em, Gm, Tc, and Vn was found in *Enterococcus faecium* in the fecal pellet of wood frogs. The cross-resistance pattern to three antibiotics (Em, Tc, Vn) and two antibiotics (Am, Em and Am, Tc) was prevalent in these isolates. Vancomycin resistant isolates showed a high level of resistance (MIC ≤ 512 µg/ml) and were also resistant to teicoplanin. PCR analysis showed amplification of the *vanA* operon sequences. The homoduplex analysis of PCR amplicon from an amphibian *Enterococci* showed sequence relatedness to the *vanA* operon of human origin. This was further confirmed by the RFLP analysis of the *vanA* amplicon indicating close relatedness of *van* resistance genes in human and amphibian bacteria. The comparison of the Tn1546-like elements in amphibian VRE, human VRE and MI-VRSA showed amplification of the same size amplicons. The results presented in this study demonstrate that for the first time amphibian feces is a reservoir of multiple antibiotic resistant *Enterococci* that carry *vanA* resistance genes homologous to Tn1546 of MI-VRSA and MI-VRE. Therefore, because the Vn resistant genes are located on a mobile element, the genes

can potentially be transferred from an amphibian to humans and animals.

ACKNOWLEDGEMENTS:

This work was supported in part by the Department of Biological Sciences, Oakland University Undergraduate Independent Research Program, Undergraduate Summer Fellowship from Pfizer Corporation, and Oakland University Center for Biomedical Research. We wish to thank Sheryl Hugger, and Catherine Maue (Quest Diagnostics) for their assistance.

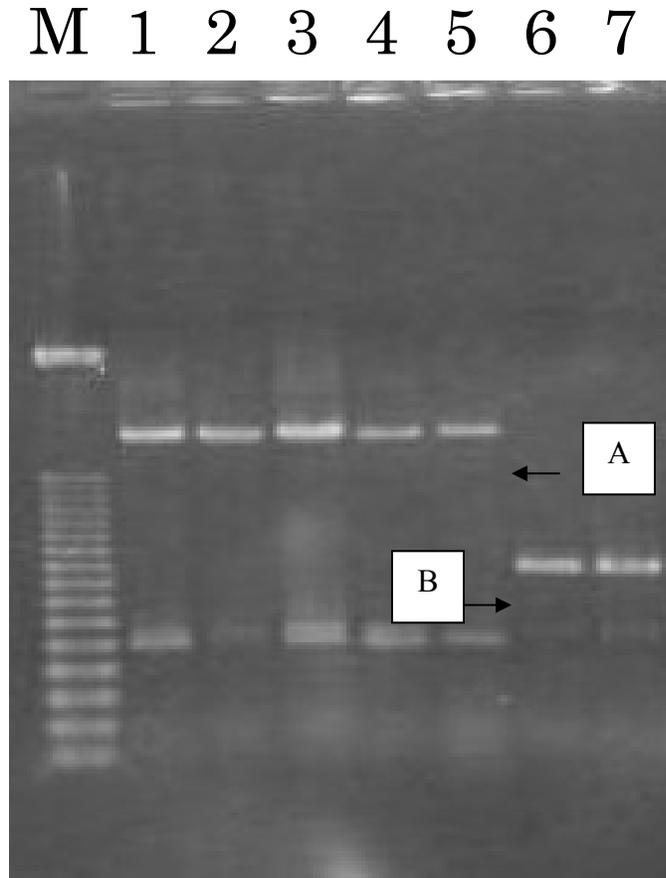


Figure. Agarose gel electrophoresis of PCR amplified DNA. M: 50bp molecular weight standard. Lanes 1-5, DNA extracted from five different Vn resistant *Enterococci* amplified with *vanA* and *vanB* primers. Lane 6, control *vanB* amplified with *vanA* and *vanB* primers; Lane 7, control *vanB* amplified with *vanB* primers.

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Prevalence of Multiple Antibiotic Resistant Bacteria in Ready-to-Eat Bagged Salad

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Abstract:

We report occurrence of multiply antibiotic resistant (MAR) bacteria in Triple-Washed Ready-to-Eat Baby Spinach (Dole Fresh Vegetables Inc., Salinas, CA 93902). The bacteria were cultured on Tryptic soy agar (TSA), Enterococcosel agar (ECA) and MacConkey agar (MCA). The frequency of isolation of total bacteria per gram of spinach was 10^5 , 10^4 and 10^2 on TSA, MCA and ECA respectively. *Enterococcus*, *Pseudomonas*, *Klebsiella* and *Enterobacter* species were found most prevalent in baby spinach salad. Bacterial isolates were tested for antibiotic susceptibility, following NCCLS antibiotic susceptibility testing guidelines, and resistance profiles were determined. The frequency of isolation of resistant gram-negative bacteria was found to be high (10^{-1} to 10^{-2}) for AMP, AZT, IMP, ZOX and FOX, where as GEN resistance was low (10^{-4}). Multiple antibiotic resistances linked to two or more antibiotics (MAR) were found in 95.34% of the 245 colonies tested. Frequent MAR patterns observed in resistant bacteria were: AMP AZT CTX ZOX FOX TAZ CHL IPM (10.93%), AMP AZT ZOX FOX CHL (4.45%), AMP FOX CHL (3.64%), and AMP AZT CTX ZOX FOX CHL (3.24%). Of the bacteria examined, 94% had resistance to FOX, 79% to AMP, 73% to CHL, 66% to ZOX, 65% to AZT, 54% to CTX, 39% to IMP, 34% to TAZ, 33% to GEN, 22% to TET, and 21% CIP. In conclusion, the growths of bile-esculin positive colonies of *Enterococcus fecium* on ECA suggest fecal contamination on the baby spinach. Human consumption of ready to eat baby spinach containing MAR bacteria could enhance the horizontal transfer and spread of MAR genes in human pathogens. Noteworthy to medical professionals, these results question the safety of consuming “Ready-to-Eat” food in regard to patients with metabolic disorders and immune diseases.

Introduction:

As the lives of consumers become busier, food companies have responded with ready to eat products ranging from fruits to salad. These products advertised as “Ready-to-Eat” or “Triple Washed” draws a picture of clean produce which are free of the bacterial flora or pathogens we have found on baby spinach. These bacterial flora and pathogens include mesophilic aerobic bacteria, psychrotrophic bacteria, Pseudomonadaceae, Enterobacteriaceae, Micrococcaceae, lactic acid bacteria and yeasts (1, 2). It seems that washed and Ready-to-Eat products are not as safe as the advertisement claims for immune-compromised and elderly persons. Presences of antibiotic-resistant pathogens have been found on fresh salad (3, 7, 10, 18, 19, 20). *Listeria* species known for causing abortion in humans have been isolated from cabbage (16) and has been found in ready-to-eat foods from restaurants (19). In a similar study, fruits and vegetables were contaminated with pathogenic microorganisms while growing in fields, orchards, vineyards, or greenhouses, or during harvesting, post-harvest handling, processing, distribution, and preparation in food service or home settings (2). Antibiotics are

used to enhance production of healthy produce and exert selective pressures for promoting the selection of MAR bacteria (13).

Antibiotics are frequently used to treat various bacterial diseases, such as typhoid, diarrhea, dysentery, hemolytic uremic syndrome. Antibiotic resistant bacterial infections have emerged in community-acquired and hospital acquired infections, many of which are caused by contaminated food (11, 12, 18, 22). As antibiotic indiscriminate use continues to increase, there is a developing pattern of emergence and spread of antibiotic resistance. Compounding this phenomenon is the fact that most genetic elements that can be transferred from one bacterium to another often provide resistance to more than one class of antimicrobial agent (21). Human consumption of raw produce that contains MAR bacteria should promote horizontal transfer of new MAR bacteria in the human gut. As resistant bacterial strains become more widespread, anti-microbial therapy will cease to be as strong a tool as it had previously been for physicians to control infectious diseases. Case in point, the incidence of serious intestinal bacterial infections is on the rise in children, elderly and immune-compromised population and is caused by antibiotic resistant bacteria that are difficult to treat (18, 22, 23). In this investigation, we report prevalence of high frequency of MAR bacteria in ready-to-eat spinach salad. Over 50% of salad bacteria were resistant to 5 or more antibiotics.

Materials and Methods:

Chemicals and bacteriological media:

Eleven antibiotics in all were used: ampicilin (AMP) (Sigma-Aldrich (S-A), St. Louis, MO), aztreonam (AZT) (United States Pharmacopeia (USP), Rockville, MD), cefoxitin (FOX) (USP), ceftazidime (TAZ) (USP), cefotaxime (CTX) (Sigma-Aldrich), ceftizoxime (ZOX) (USP), chloramphenicol (CHL) (Sigma-Aldrich), ciprofloxacin (CIP) (Fluka Biochemika, Switzerland), gentimicin (GEN) (Sigma-Aldrich), imipenem (IPM) (USP) and tetracycline (TET) (Sigma-Aldrich). Several types of agar which were poured according to NCCLS (National Committee on Clinical Laboratory Standards) were used along with broth to select for and maintain bacteria: MacConkey agar (BD-Difco, Sparks, MD, USA 21152), Tryptic Soy agar (Difco Labs, Detroit, MI 48232), Enterococcosel agar (BD-BBL), Brian Heart Infusion broth (BD-BBL), and cation-adjusted Mueller-Hinton II agar (BD-BBL).

Bacteriological analysis of the spinach salad:

Spinach salad samples were obtained at a local supermarket ("Triple-Washed Ready-to-Eat Baby Spinach" Dole Fresh Vegetables Inc., Salinas, CA 93902). Four samples of bagged salad were used for bacteriological analysis; all were kept at refrigeration temperature. The salad samples were processed within 24-48 hours of purchase. For bacteriological analysis, the samples were prepared by homogenizing 10g of salad leaves per bag with 100mL of normal saline, pH 7.2 in a blender. Ten fold serial dilutions of the homogenate were prepared and 0.1mL of each dilution was plated on appropriate agar media. Inoculated plates were then wrapped in laboratory film (Parafilm, American National can, Neenah, WI 54956) and placed in an incubator at 37° C for 24 hours. Isolated colonies on each plate were then counted and multiplied by the reciprocal of the dilution factor to find the population count. Enterococcosel agar was used to select for *Enterococcus* species. Brian Heart Infusion broth was chosen as the medium for tube cultures and cation-adjusted Mueller-Hinton II agar was used to test for antibiotic susceptibility along NCCLS guidelines (National Committee on Clinical Laboratory Standards). Isolates were determined to be either oxidase-positive or oxidase-negative by Spottest Oxidase Reagent. Control organisms (*Escherichia coli* ATCC 25922, *Klebsiella pneumoniae* ATCC 700603, *Enterococcus faecalis* ATCC 29212, *Staphylococcus aureus* ATCC 29213) were used to ensure the quality of the media and potency of the antibiotic. Bacterial isolates were identified by using

API strips.

Antimicrobial susceptibility testing:

Following NCCLS guidelines and the Clinical Microbiology Procedures Handbook antimicrobial stock powders were made into stock solutions. NCCLS guidelines were used to determine the antibiotic concentrations necessary to test for bacterial antibiotic resistance (National Committee on Clinical Laboratory Standards). Five to ten colonies were randomly picked purified and maintained in Brain-Heart Infusion broth with the antibiotic. A portion (30 µl) of each culture was spotted on to cation-adjusted Mueller-Hinton II agar plates that contained AMP 32µl, AZT 32µl, CTX 64µl, ZOX 64µl, FOX 32µl, TAZ 32µl, CHL 32µl, CIP 4µl, GEN 16 µl, IPM 16µl, or TET 16µl per ml with 36 well Cathra Replicator (Cathra Replicator, Minneapolis, MN). The inoculated plates were incubated at 37°C in an environmentally controlled incubator for 24 hours and then the plates were scored for bacterial growth.

Results and Discussion:

Bacterial counts on spinach salad:

The total bacterial population in Dole Triple Washed Ready-to-Eat spinach salad ranged from 3.66×10^5 - 3.4×10^6 . This is higher than the recommended bacterial load for salads (3). We also found bile-esculin positive colonies of *Enterococcus fecium* on ECA and other predominant bacterial species *Klebsiella pneumoniae*, *Enterobacter aerogenes* and *Pseudomonas florescence* on MAC agar. Presence of these organisms suggests either the spinach was grown on untreated manure containing fecal organisms or possible enterobacterial contamination of spinach salad during washing and processing. Previous studies from our laboratory have shown isolation of antibiotic resistant *E.coli* in drinking water (21). Isolation of antibiotic resistant bacteria from produce grown on fields fertilized with cattle and poultry manure has been reported (20, 23). We have also determined the frequency of antibiotic resistant bacteria in spinach salad.

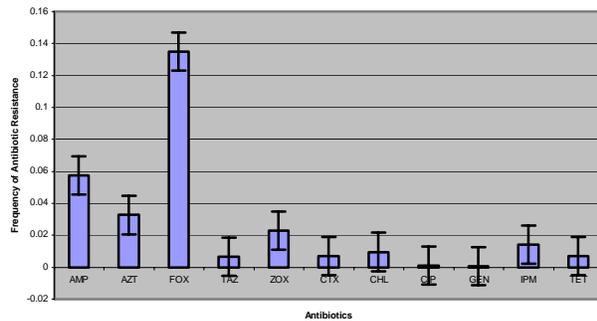


Figure 1: Histogram showing frequency of antibiotic resistance bacteria on salad. Resistance was tested against AMP, AZT, CTX, ZOX, FOX, TAZ, CHL, CIP, GEN, IPM, and TET.

The results of the frequency of antibiotic resistant bacteria isolated from spinach salad are shown in Figure 1. FOX and AMP resistant bacteria were more prevalent than GEN and CIP. A total of 245 isolates were tested for antibiotic susceptibility and the results are presented in Figure 2.

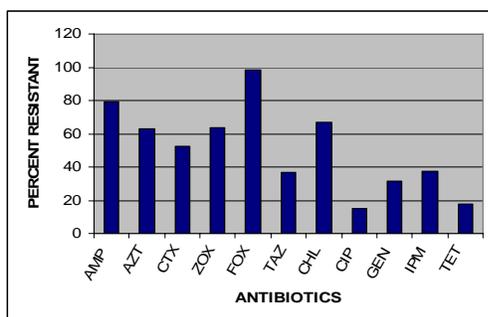


Figure 2: Histogram showing percent antibiotic resistance for bacteria isolated from spinach salad.

Over 60% of the isolates were resistant to AMP, AZT, ZOX, FOX and CHL. The resistance to CIP, GEN and TET were less than 20% in these isolates. This difference in β -lactam resistance (AMP, AZT, FOX, and ZOX) to GEN and CIP could be due to β -lactamase producers, ESBL (4, 5) or oxidase positive *Pseudomonas* species in spinach salad that is inherently resistant to many β -lactam antibiotics and is more susceptible to GEN and CIP. Occurrences of antibiotic resistant bacteria in ready-to-eat salads, vegetables and produce have been reported (16).

Multiply antibiotic resistance patterns and identification of bacteria:

We determined MAR patterns of oxidase positive (136) and oxidase negative (116) bacteria. Two isolates, one oxidase negative and one oxidase positive were resistant to all the 11 antibiotics tested. A comparison of the antibiotic resistance in oxidase negative and oxidase positive isolates are shown in Figure 3. There was no significant difference found in percent resistance in these two groups of bacteria. Oxidase negative bacteria (88%) showed resistance to 4 or more antibiotics as compared to MAR in oxidase positive bacteria (82%). The most prevalent antibiotic resistance linkages for oxidase-negative bacteria were AMP AZT CTX ZOX FOX TAZ CHL IPM (12%), AMP AZT ZOX FOX CHL (9.48%), and AMP AZT CTX ZOX FOX CHL (6.89%). For oxidase-positive bacteria, MAR patterns included AMP AZT CTX ZOX FOX TAZ CHL IPM (9.55%), AMP CTX FOX TAZ CIP GEN IPM (4.41%) and AMP FOX CHL (6.61%). Multiply resistant (5 or more antibiotics) enterobacteria such as *Enterobacter cloacae*, *Citrobacter freundii*, *Klebsiella pneumoniae*, *Escherichia coli*, *Pantoea agglomerans* and *Serratia* spp have been reported in agriculture food stuff (3, 13, 23) produce (10), and salads (20) and vegetables (6, 7, 16, 22).

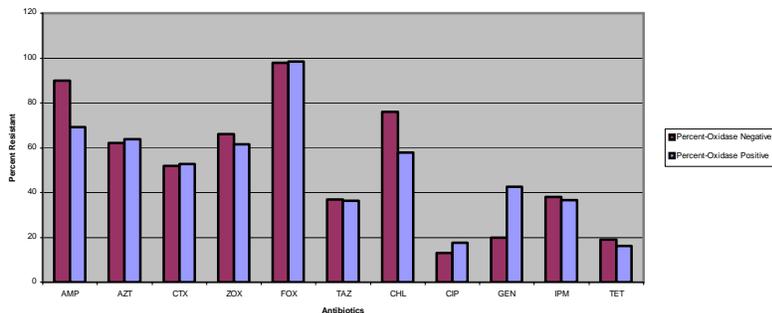


Figure 3: Percent antibiotic resistance for aerobic oxidase positive and aerobic oxidase negative bacteria. Resistance was tested against AMP, AZT, CTX, ZOX, FOX, TAZ, CHL, CIP, GEN, IPM, and TET.

The fact that many bacteria in spinach salad were found resistant to antibiotics and many to several antibiotics should signal to medical professionals and consumers that food packaged with labels such as “Ready-to-Eat” or “Triple-Washed” may in fact be misleading. Not only do our results suggest that there was possibility of fecal contamination but also that individuals with compromised immune systems could potentially develop bacterial infections that would be unresponsive to available antibiotic therapy. Consumption of raw produce carrying MAR bacteria elevates AR gene pool in the human gut and definitely increases the probability of the transfer of these resistance genes into human bacterial flora. The risk of horizontal transfer of MAR into human pathogens is of great concern. We have identified AR potentially pathogenic bacteria *Staphylococcus*, *Enterococcus*, *Klebsiella*, *Enterobacter* and *Pseudomonas* species in spinach salad. Similar to our study, other investigators have also reported pathogenic bacteria in ready to eat food (18, 19, 22), produce (10, 17), vegetables (6, 7, 16, 22), fruits (2, 20). The horizontal transfer of bacterial genes in human gut flora has been reported previously as well (3, 13, 21, 23). The source of antibiotic resistant genes in bacteria isolated from spinach salad may

be correlated with the indiscriminate use of antibiotics in aquaculture, poultry, animal husbandry, horticulture and agriculture industry (13, 23). The antibiotics in low concentration are distributed in the environment via agricultural runoff from precipitation and animal and poultry feces used as fertilizer. These antibiotics select bacteria containing MAR genes and will continue to spread MAR genes to produce and other food sources. The results of this study warrant further investment of time, money, and research into food safety perspective of antibiotic resistance. The possibilities of expanding the food safety perspective of antibiotic resistance have also been discussed in previous studies (12, 13, 23). There is a need for further studies to characterize the antibiotic resistance profiles, examine the molecular nature of the resistance genes, the exact source of contamination, and the horizontal and vertical transfer of resistance bearing genes in raw “Ready-to-Eat” fruits, vegetables and salads and also in the human gut.

Acknowledgement:

This research was funded in part by Undergraduate Summer Research Fellowship Program of Pfizer Corporation and Oakland University’s Center for Biomedical Research. We thank Conan Duda, Sheryl Hugger and Catherine Maue of Quest Diagnostics for their assistance and support.

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The French Identity: An American Translation

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All cultures identify themselves by common language, food, social customs and history. This is how they are seen in the world and in every day life, how they function as a country and as a part of the world. Many times, their motives or customs seem beyond foreign to other cultures. If people cannot identify with a culture, they cannot understand it. When outside influences threaten the identity of a country one of two things must happen: the culture must do whatever it takes to address the threat and strengthen their own identity, or integrate the threat within their own culture, thus irrevocably changing their identity. The French culture identifies itself by history, language, cuisine and its own national pride. However, in today's world, many of these traits are threatened in very specific ways. This essay is not intended to proclaim a winner of one culture over another, it is meant to give an understanding of the French identity to an American audience and to decipher aspects of the French culture easily lost in translation.

The language of a culture is its most obvious characteristic. The language they speak can define a people, and the evolution of a language and its culture are depending on each other. Modern French took root during the medieval period in France when three dialects developed: the Langue d'Oïl in the north, the Langue d'Oc in the south and Franco-Provençal. French as we know it today was introduced in 1539 by François I. Throughout history the French language has been used not only as a form of communication for its citizens, but for the arts and the political world as well. French has also been used as a tool for diplomacy by the World and has been an active part of the global push for democracy until recent times. "*Mondialisation*", or globalization as Anglophones call it, has influenced, if not altered, the French language. With the advent of America and its economical, technical and scientific advances, more and more English words have been introduced into the French vernacular. Today's open society threatens the foundation of the French identity by replacing its lexicon brick by brick. Hubert Védrine, who served as the French Minister of Foreign Affairs between 1997 and 2002 states:

“ ... [French]... for about 150 years, from the late 18th to the early twentieth century, was the language of royal courts and European elites, and thus also the language of international relations. It has remained for a long time the language of treaties. That's how French acquired a universal dimension and prestige that it retains, in part, today”.

Dominique Moïsi, deputy director of the French Institute for International Relations and regular columnist for the Financial Times adds:

“But in many ways the twentieth century has seen the defeat of the French language. In 1914 almost all the chancelleries of the world communicated in French. In 2000 the global language of communication is English, in its American version. Yet language is the key tool for promoting one's

civilization and culture”, (*France in An Age of Globalization*, Védérine and Moïsi, p. 20).

This is not necessarily an attack on American English, or on a country that sponsors so much invention and progress for the betterment of the world as much as it is a preservation of identity. As Americans identify themselves with the English language and pursue its strength within their own country, the French strive to keep their language strong within their own borders as well. Today, France is encouraging French culture and language in the world by reaching out to other countries with various French cultural exchange programs. To promote the survival of their identity, it is taught throughout the world to act as an ambassador for their culture. It is important to the French that their language and culture is preserved at home. Language as identity is detrimental in the integration of immigrants within the country. The French language identifies them as French citizens. The threat to this aspect of the French identity is foreign linguistic saturation and dominance in France versus linguistic and cultural diversity in the world and preservation within their own country.

Another source of French pride and identity is their Cuisine, which is also an admired delicacy around the world. French food, however, doesn't simply begin in the kitchen. A typical French meal begins not in the pantry or restaurant but in the fields. France's produce includes, but is not limited to, fine wines, cheeses, seafood, beef, poultry and game all of which are grown, raised and aged on French soil and seas. France boasts over 365 different kinds of cheese, and supports over thirteen different wine regions. Certain products, such as wine and cheese are indigenous only to France based on the regional soil and growing conditions. These products not only support cuisine within the borders of France, but are also exported around the world. French agriculture supports French families and businesses. However, this national source of pride and global treasure is under attack by a tightening capitalist market. The American sense of cuisine and capitalism differs greatly from the French experience; America does not put as much emphasis in the family meal as the French do, and America is basically run on supply and demand. In France, a typical French dinner consists of several courses and can last for several hours. Many Americans rarely have time to really eat together, and when they do, an American dinner generally lasts approximately an hour to an hour and a half. Americans depend more on fast food restaurants, and because the United States is so large, it is difficult and expensive to get fresh food produced locally as opposed to being shipped from different parts of the country. Fast food seems to be a cheap and reasonable alternative for most Americans who generally eat on the run during half hour lunch breaks or after a late day at the office. The price can be steep in the long run, both economically and in terms of health. Fast food consumption has been linked to higher likelihood of food born illnesses, which in turn, can have long-term effects on health. According to *Fast Food Nation* by Eric Schlosser:

“Recent studies have found that many foodborne pathogens can precipitate long-term ailments, such as heart disease, inflammatory bowel disease, neurological problems, autoimmune disorders, and kidney disease”, (*Fast Food Nation*, Eric Schlosser, p.195).

A small world combined with big business threatens the culinary identity of a culture that regards food as art of living. In the village of Millau, France, a handful of farmers acted against such an invasion of the French culture. On August 12, 1999, these farmers, led by José Bové,

inspired a village to protest the opening of a McDonald's restaurant. To an American society, it looks like a simple case of supply and demand, out of which the farmers should have stayed. However, the consequences of a fast food nation are very high indeed. The French look at a meal as a social event. It is artistic, satisfying and a source of national identity. Families eat together, food is fresh and it is not a rushed event. The mass consumption of fast food can destroy this sense of familial cohesion. In his book *The World Is Not For Sale, Farmers Against Junk Food*, José Bové states:

“It's a major loss. Apart from the odd Sunday, or special occasions, the meal is no longer the focus of the day, a time for conviviality and sharing. This change is due to the pressures of contemporary culture at work and during leisure time. It's also a symptom of the vacuity of much of modern life[...] Technology is stripping meaning from all of life's activities”.

François Dufour, a French farmer and colleague of Bové's continues:

“Any general understanding of food and where it comes from is also rapidly disappearing. Nowadays, agriculture is increasingly devalued, and alongside this, food is increasingly standardized. We have completely distanced ourselves from an understanding of our relationship to food. People no longer see the link between wheat and bread. We eat, but we don't nourish ourselves, even on the farm”, (*The World Is Not For Sale, Farmers Against Junk Food*, José Bové et al, p.57).

Another aspect to this situation is “*mondialisation*”. The closing of the McDonald's of Millau was done in part by a reaction of the French farmers to America's taxation of imported French Roquefort cheese from thirty dollars to sixty. This was a result of the ban by the European Union on hormone-injected beef. This put a huge strain financially on the farmers who relied on those exported goods. McDonald's also participates in intensive farming which goes against the cycle of nature, overworks the fields, invites the use of chemical agents, and can include unnatural feeding practices of livestock resulting in disease, obesity and food borne illness. It is also discomfoting to a French farmer who may lose money, land, identity and livelihood to a foreign company selling at less than quality standards. To an American society, it may appear snobbish to reject an American fast food chain that obviously serves people all over Europe, including France. But the truth of the matter is, it is a danger to the French family, their health, their personal finances, and mostly their sense of being.

The Republic of France was founded on the idea of liberty, equality and fraternity. These fundamental rights exist independent of religious beliefs. France is very careful to keep religion separate from government and citizens are free to practice the religion of their choice. However, spirituality is expressed privately. France, like any country falls victim to racism and prejudice, but the general idea is that every one is of the same national identity and deserves equal constitutional rights. To Americans, it may seem odd or even oppressive of someone's personal identity; Americans are generally interested in a person's ancestral background due to such cultural diversity within their own borders. However, America was founded by European cultures, and France was founded by its own native groups. Consequently, the disappearance of

the French national identity would be disastrous. To single out or discriminate against a group based on their religion or ethnicity would defy their sense of equality. Separation from the parent culture, i.e. France, would discriminate against the adopted sibling culture by keeping it alienated from the citizenship it wished to be a part of, based on the adopted citizens religious or ethnic background. This would be unconstitutional, as it would treat newly adopted citizens as outsiders within their own newly adopted culture. A recent law passed in 2004 prohibits public expression of religion, (particularly in schools), such as the wearing of Muslim hijabs, large Christian crosses and crucifixes, Jewish yarmulkes and Sikh turbans. However, this was not meant to restrict a person's ability to practice their religion. This was to keep religious affairs out of government and government sponsored places like schools and the workplace. This sits uneasily with many Americans, especially with a fluctuating line separating church and state driven through the center of their country and national pride regarding freedom of expression. Any infringement on the rights of citizens from any country to openly practice their religion is offensive to many Americans, who believe that their own country was founded on Christian religious ideals. The major difference is not nestled in religious intolerance by the French. It rests in the American sense of public expression of their beliefs both temporal and spiritual and the French sense of privacy. For the French, morality exists not only within religion, but within the secular world as well.

In conclusion, the cultural identity of the world is a treasure of diversity. Both cultures, American and French, reinforce and protect their identities. Both have a sense of what makes them who they are; what makes them different from other cultures. Certain parts of people's identities make it difficult to understand why other people live so differently from each other, or why they behave in the way that they do. The threats to our own identities, American and French, may be so different that we struggle to understand the rejection of our influence in their culture and vice versa. However, one common link connects us: we defend our distinctive cultural identities in the world to preserve our identity's culture at home.

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ⁱ The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) entered into force on September 3, 1981.

ⁱⁱ See <http://www.un.org/womenwatch/daw/cedaw/states.htm>. Retrieved on 2/14/05.

ⁱⁱⁱ See UNIFEM, *Bringing Equality Home: Implementing the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)*, available at: <http://www.unifem.undp.org/cedaw/cedawen4.htm>. Accessed 2/14/05.

^{iv} In order to for an international treaty to become ratified under the United States Constitution, a

President must first sign a treaty before submitting it on for review by the Senate Foreign Relations Committee. Once the Committee considers the treaty, the full Senate can then deliberate and vote on it, where two-thirds (67) of the entire Senate must approve it. Finally, the sitting President must re-sign the treaty.

- ^v For a detailed history of the U.S. Senate ratification process with regard to the CEDAW, see: http://www.womenstreaty.org/facts_history.htm. In June 2002, the Senate Foreign Relations Committee held a hearing on CEDAW. On July 30, 2002, the Committee voted twelve to seven in favor of sending CEDAW to the full Senate for ratification. Unfortunately, the full Senate did not vote on CEDAW before the end of the 107th Congress. For CEDAW to move forward, the Senate Foreign Relations Committee will again need to vote in favor of sending the treaty to the full Senate for ratification. At present, the CEDAW remains stalled in the Senate Foreign Relations Committee.
- ^{vi} See *CEDAW: The Treaty for the Rights of Women*. Ed. Leila Rassekh Milani, Sarah C. Albert and Karina Purushotma. Washington: The Working Group on Ratification of the U.N. Convention on the Elimination of all Forms of Discrimination Against Women, 2004.
- ^{vii} See Jordan, CEDAW 22nd Session, 2000. Available at: <http://www.un.org/womenwatch/daw/cedaw/cedaw22/jor1.pdf>
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- ^x The treaty is officially known as the Convention for the Suppression of Traffic in Persons and of the Exploitation of the Prostitution of Others.
- ^{xi} Abridged from *CEDAW: The Treaty for the Rights of Women*. Ed. Leila Rassekh Milani, Sarah C. Albert and Karina Purushotma. Washington: The Working Group on Ratification of the U.N. Convention on the Elimination of all Forms of Discrimination Against Women, 2004. pg. 30
- ^{xii} Ibid. pg. 42
- ^{xiii} For a detailed timeline of the history of the CEDAW Treaty, see: http://www.womenstreaty.org/facts_history.htm
- ^{xiv} It should be noted that the only countries that have not ratified the CEDAW treaty include Monaco, Iran, Oman, Qatar, United Arab Emirates, Brunei Darussalam, Cook Islands, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Tonga, Somalia, Sudan, Swaziland, and the United States of America.
- ^{xv} See Koh, "Why America Should Ratify the Women's Rights Treaty (CEDAW)." *Case Western Reserve Journal of International Law*. (2002): 34.3, pg. 266
- ^{xvi} Ibid, pg. 267
- ^{xvii} Ibid, pg. 269-70
- ^{xviii} See DeFranciso, et. al. "The Home Side of Global Feminism: Why Hasn't the Global Found a Home in the U.S.?" *Women and Language*. (2003): 26.1, pg. 101
- ^{xix} See the Human Rights Watch Campaign for CEDAW Ratification: <http://hrw.org/campaigns/cedaw/>
- ^{xx} For this argument, see the advocacy material of the campaign to ratify the Women's Treaty: <http://www.womenstreaty.org/why.htm>
- ^{xxi} See the Human Rights Watch Campaign for CEDAW Ratification: <http://hrw.org/campaigns/cedaw/>

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<http://www.amnestyusa.org/women/interact/cerd_cedaw.html>

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B- and N-doped Analogs of Fullerene C₂₈

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Abstract

C₂₈, a candidate of the smallest stable fullerene, has been of interest for many years. Due to the existence of four singly occupied C atoms, it cannot be synthesized without a stabilizer. Recently a new heterofullerene, C₁₆N₁₂, was experimentally obtained and theoretically confirmed. In this study, we extend our investigations to B- and N- doped analogs (C₁₆N₁₂ and C₁₆B₁₂) and their closed shell cations and anions. Also, the effect of stabilizations by B and N substitution are discussed.

Introduction

Fullerene, C₆₀, has been of considerable interest for many years due to its unique properties and applications [1,2]. The surface of C₆₀ is made from 20 hexagons and 12 pentagons. It is an example of a semiregular solid called a truncated icosahedron. High ratio of number of hexagons to that of pentagons makes the structure of C₆₀ relatively flattened. Recently the structure and stability of fullerenes with less than 60 carbons has become the subject of considerable experimental and theoretical studies [3-6] because smaller fullerenes are functional candidates for synthesis of cluster assembled materials. Compared with C₆₀, these smaller fullerenes still have 12 pentagons but with smaller number of hexagons. Due to a smaller ratio of hexagons to that of pentagons, their structures are more curved. Among these small fullerenes, C₂₈ [7], was considered the smallest stable fullerene, while the smallest one that has been synthesized to date is C₃₆ [8]. However, theoretical and experimental efforts have been spent in studying and obtaining the stable structure of its C₂₈ or analogs.

The structure of C₂₈ (Figure 1) is a polyhedron with three groups of nonequivalent C atoms [9]. The first group involves four “trivalent” (C1) atoms at tetrahedron vertices, which are surrounded by 3 pentagons. The second group includes the twelve atoms (C2) immediately bordering them. The remaining twelve atoms (C3) constitute the third group. The ground state of this fullerene is ⁵A₂ with four unpaired electrons located on C1-type atoms and therefore, C₂₈ fullerene can be obtained only in the presence of “stabilizers.” Three common stabilized structures are [10-14]: (1) endohedral complexes (M_m@C_n) by inserting guest atoms inside the nanoparticle cage; (2) exohedral complexes (C_nM_m) by interacting guest atoms (or molecules) outside the fullerene molecule; (3) heterofullerenes (C_{n-m}M_m) by substituting some atoms in the fullerene shell. It has been suggested that substituting C1 atoms with electron-rich N or electron-deficient B can stabilize the structures of these kinds of structures.

Recent studies show the formation of heterofullerene C₁₆N₁₂ is by an arc mass charge method [7]. Further, its structural and electronic properties are studied [13]. Encouraged by the preliminary results, a thorough theoretical study of heterofullerene analog of C₂₈ is performed.

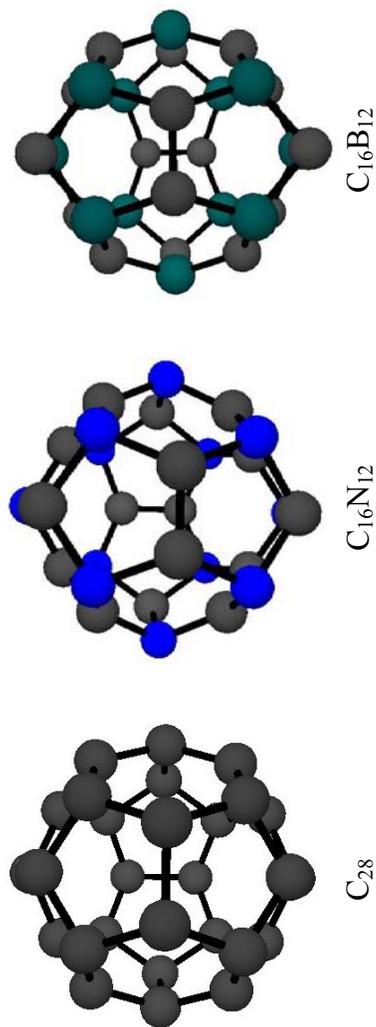


Figure 1. Structures of C_{28} , $C_{16}N_{12}$, and $C_{16}B_{12}$.

Table 1. Optimized geometries (bond length in Å and bond angle in degrees) and bond orders of C_{28} , B- and N- doped analogs, and their anions and cations calculated at the B3LYP/cc-pVDZ level.

	$C_{16}N_{12}$	C_{28}	$C_{16}B_{12}$	$C_{16}N_{12}^{4+}$	C_{28}^{4+}	$C_{16}B_{12}^{4+}$	$C_{16}N_{12}^{4-}$	C_{28}^{4-}	$C_{16}B_{12}^{4-}$
R_{C1-X2} ^a	1.4849	1.4587	1.5860	1.3931	1.4591	1.5899	1.6429	1.4711	1.6140
Bond order	1.04	1.14	1.06	1.20	0.99	0.97	0.87	1.11	1.25
R_{X2-C3} ^a	1.4277	1.4305	1.5736	1.4201	1.4287	1.5934	1.4433	1.4459	1.6140
Bond order	1.06	1.28	1.06	1.07	1.25	1.02	1.08	1.32	1.07
R_{C3-C3}	1.3401	1.5190	1.4105	1.3721	1.5491	1.4302	1.3357	1.5198	1.4042
Bond order	1.62	1.06	1.47	1.50	1.11	1.39	1.68	1.21	1.52
$\angle X2-C1-X2$ ^a	108.3	109.9	124.6	112.1	113.2	122.2	101.1	107.2	126.8
$\angle C1-X2-C3$ ^a	103.9	107.3	112.0	104.7	105.4	107.1	104.8	109.9	113.2
$\angle C3-X2-C3$ ^a	110.4	120.4	124.6	117.4	118.0	107.1	105.6	112.0	116.0
$\langle S^2 \rangle$ ^b	6.02	6.08	6.03						

^a X is N, C, and B.

^b spin contamination.

In this study, ab initio calculations of structures and electronic properties of both heterofullerene $C_{16}N_{12}$, $C_{16}B_{12}$ are presented and compared with C_{28} . Vibrational spectra of isolated neutral species, as well as the infrared intensities and Raman activities, are calculated. In addition, studies are extended to the closed-shell anions and cations. The effect of substitution on the stability of heterofullerene is discussed.

Computational Details

The geometries were optimized at the HF level in the corresponding symmetry group, and finally, at the hybrid HF/DFT level. An unrestricted open shell wavefunction was used to describe the HF/DFT quintet states. In the hybrid HF/DFT calculations, a B3LYP functional (Becke 3-parameter Lee-Yang-Parr) which combines five functionals, namely Becke + Slater + HF exchange and LYP + VWN5 correlations [18-20] was used. In all calculations, Dunning's cc-pVDZ (correlation consistent polarized valence double zeta [24]) basis set was used because previous studies [25, 26] showed it appears to be the best compromise between basis set size and quality for harmonic frequencies. The GAMESS suite of programs was used for all calculations [27-29] and MacMolPlt was used for visualization [30]. All calculations are performed on Mac Power G5 cluster.

Results and Discussion

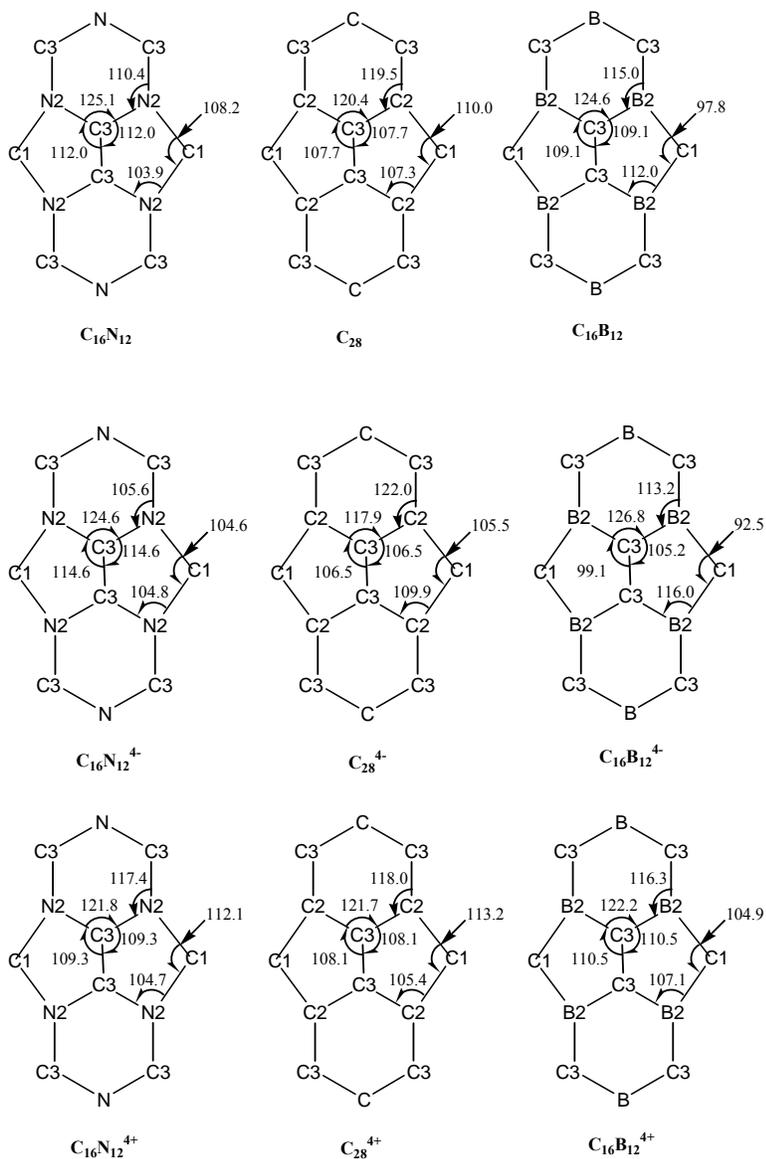
1. Optimized geometrical structures

Optimized bond lengths and angles are listed in Table 1. For C_{28} , C3-C3 has the longest bond length, while C1-C2 and C2-C3 are considerably shorter. Because there is a dangling bond on C1, it is expected that C1 has more sp^3 character. Bond order analysis shows bond orders of 1.14, 1.28, and 1.06 for C1-C2, C2-C3, and C3-C3, respectively, which indicates that no strong double bonds are formed.

Upon structural relaxation for $C_{16}N_{12}$, the C1-N2 bonds change by 2% with respect to C1-C2 bond length and N2-C3 bond lengths are very close to those for C2-C3, in agreement with previous calculations on $C_{48}N_{12}$ [31] and $C_{24}N_{12}$ [4]. Interestingly, substitution with nitrogen results in a 12% shortening of the C3-C3 bonds across the hexagon belt. Obviously C3-C3 bonds are greatly strengthened by substituting C2 with N and the bond lengths are much closer to C=C bonds. In addition, the bond order analysis shows that the bond order of C3-C3 increases from 1.06 in C_{28} to 1.62 in $C_{16}N_{12}$ while C1-N2 and N2-C3 are very close to a single bond (1.04 for C1-N2 and 1.06 for N2-C3, respectively). Similar observations are found from comparisons of C_{36} and $C_{24}N_{12}$ [4]. In the case of $C_{16}B_{12}$, a stronger C3-C3 bond is found as well, with a 6% decrease in C3-C3 bond length compared to that in C_{28} and the bond order of 1.47.

The strengthening of the C3-C3 bond in $C_{16}N_{12}$ and $C_{16}B_{12}$ can also be explained by bond angles. From Table 1 and Figure 2, $\angle C2-C3-C3$ with the value of 107.7° forces the two C3 atoms out of the plane in which four neighboring C2 atoms are located. Therefore, it is more difficult to form double bonds between two C3 atoms. $\angle X2-C3-C3$ has a value of 112.2° and 109.1° for $C_{16}N_{12}$ and $C_{16}B_{12}$, respectively, which means that both of them have more of a flattened structure. As a result, sp^2 orbitals on C3 of $C_{16}N_{12}$ and $C_{16}B_{12}$ are not bent as much as those in C_{28} , which supports the formation of a stable C=C bond.

Figure 2. Bond Angles (in degrees) of C_{28} , $C_{16}N_{12}$, and $C_{16}B_{12}$



2. Vibrational frequency analysis

Table 2 shows calculated results of IR intensities and Raman activities for both C_{28} and $C_{16}N_{12}$ (Table 2). The vibrations of C_{28} fullerene, $C_{16}N_{12}$ and $C_{16}B_{12}$ heterofullerene with T_d symmetry decompose as $5a_1 + 2a_2 + 7e + 8t_1 + 11t_2$, where a_1 and e are Raman but not IR active, and t_2 is both IR and Raman active, the a_2 and t_1 manifolds are neither IR nor Raman active.

Similar to C_{60} , IR signals for C_{28} separates into high-frequency (1200~1450 cm^{-1}) and low frequency (800~1000 cm^{-1}). Our results for C_{28} are in excellent agreement with previous studies.

From the calculated vibrational spectrum, IR signals of $C_{16}N_{12}$ can be found in three

regions: high-frequency (1300~1700 cm^{-1}), intermediate frequency (700~1000 cm^{-1}), and very low frequency (300~400 cm^{-1}). The proposed structure of $\text{C}_{16}\text{N}_{12}$ suggests the existence of three characteristic stretch modes associated with $\text{C3}=\text{C3}$, $(\text{C3}=\text{C3})\text{-N2}$, and C1-N2 . The signal at 1700 cm^{-1} is related to the C3-C3 stretch [32], compared to 1214 cm^{-1} in C_{28} . As a result of N substitution, vibrational mode shifts from the range of C-C single bond (700~1200 cm^{-1}) to the range of C=C double bond (1600~1700 cm^{-1}). It is proven that C3-C3 bond is strengthened. The second form of evidence to support the structure of $\text{C}_{16}\text{N}_{12}$ is the signals at 1303 and 1301 cm^{-1} , which are related to the $(\text{C3}=\text{C3})\text{-N2}$ stretch. The absorption of the conjugated C-N stretch ranges from 1250~1360 cm^{-1} . If the structure of $\text{C}_{16}\text{N}_{12}$ is close to that as we described, there should be another C-N stretch in $\text{C1-N2-(C3}=\text{C3)}$. Because it is unconjugated C-N linkage, the absorption is expected at a low wave number (1020~1250 cm^{-1}) with medium-to-weak absorption. The vibrational analysis for the calculated results shows that the absorption at 969 cm^{-1} corresponds to this C-N stretch. Furthermore, absorption is found above 2000 cm^{-1} and, then, it excludes the possibility of the existence of the multiple bonds between the carbon and the nitrogen.

Table 2. Vibrational Frequency of C_{28} , $\text{C}_{16}\text{N}_{12}$, and $\text{C}_{16}\text{B}_{12}$.

$\text{C}_{16}\text{N}_{12}$ ν^a	IR ^b	C_{28} ν	IR	$\text{C}_{16}\text{B}_{12}$ ν	IR
329	0.75	402	0.02	210	0.02
414	0.27	529	0.01	347	0.01
660	0.11	691	0.2	560	0.09
700	0.01	717	0.02	625	0.00
736	0.21	775	0.07	646	0.61
841	0.21	800	0.27	726	1.55
902	0.05	995	0.25	826	0.01
969	0.18	1110	0.01	1001	2.12
1301	0.24	1215	0.41	1174	1.78
1303	4.03	1284	0.28	1236	0.82
1700	0.39	1420	0.41	1354	0.62

^a Frequency in cm^{-1} .

^b Infrared intensities in D^2/amu .

3. Electronic properties

Mulliken charges are calculated at the same level of theory as the geometry optimization. Although Mulliken charge analysis cannot estimate the atomic charges quantitatively, their signs can be estimated. The Mulliken charges (Table 3) on C1-, C2-, and C3-type carbon atoms in C_{28} are 0.004, -0.007, and 0.005, respectively, which are very similar to the zero charge observed in C_{60} [32]. Since the nitrogen atom is more electronegative than the carbon atom, it is reasonable to expect that the nitrogen atoms act as electron acceptors and the carbon atoms as electron donors. The Mulliken analysis indicates that charges on C1, N2, and C3 are 0.158, -0.194, and 0.142, respectively. Comparison studies have been done on $\text{C}_{16}\text{B}_{12}$ and the boron atoms behave as electron donors and C1 carbon atoms as electron acceptors. Therefore, $\text{C}_{16}\text{N}_{12}$ and $\text{C}_{16}\text{B}_{12}$ have opposite electronic polarizations, while C_{28} is almost isotropic.

Previous studies showed that forming an exohedral complex, fulfilling the dangling bond on C1, can stabilize the hexagonal structures [13]. Here we extended the investigation to the cation (4+) and anion (4-) of all molecules. Table 1 shows that, although cation and anion have closed shells, the shrinkage of C3-C3 bond length is still obvious. Bond order analysis supports the stronger C3-C3 bond. It also demonstrates that the cations and anions of heterofullerenes have more flattened structures, compared to those of C₂₈. All these results suggest that substitutions by N or B atoms in C₂₈ is the dominant factor stabilizing the fullerene structure by strengthening hexagon belts, instead of enhancing the stability of every hexagon.

Table 3. Mulliken charges calculated at the B3LYP/cc-pVDZ level

	C ₁	X ₂	C ₃
C ₁₆ N ₁₂	0.142	-0.194	0.158
C ₂₈	0.004	-0.007	0.005
C ₁₆ B ₁₂	-0.083	0.008	0.020
C ₁₆ N ₁₂ ⁴⁺	0.277	-0.085	0.424
C ₂₈ ⁴⁺	0.188	0.064	0.244
C ₁₆ B ₁₂ ⁴⁺	0.159	0.196	0.084
C ₁₆ N ₁₂ ⁴⁻	0.043	-0.298	-0.235
C ₂₈ ⁴⁻	-0.169	-0.084	-0.242
C ₁₆ B ₁₂ ⁴⁻	-0.210	-0.242	-0.021

Summary

We have carried out Density Functional Theory calculations for molecular C₂₈, C₁₆N₁₂, and C₁₆B₁₂ with fullerene structure. The calculated geometries suggest that nitrogen or boron substitution of C2-type carbon atoms introduces a 12% (6% for boron substitution) shortening of the C3-C3 bonds across the hexagon belt, which indicates that the bond lengths are much closer to C=C bonds. The C₁₆N₁₂ and C₁₆B₁₂ structure have more flattened surfaces, which allow forming the C3-C3 bond with more *p* characters. The calculated infrared absorption spectra of C₁₆N₁₂ and C₁₆B₁₂ show the characteristic modes of C=C. Calculated results of cations (4+) and anions (4-) of C₁₆N₁₂ and C₁₆B₁₂ show the similar enhanced C3-C3 bonds. It implies that B- and N- doped fullerene C₂₈ are stabilized by strengthening the hexagon belts, instead of the regular stabilization of the hexagons with forming the closed-shell on C1.

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