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About

The Compass is an online scholarly journal edited and produced by students in the Arcadia University Honors Program. It is dedicated to providing a platform for undergraduate research and insight so that it may inspire, intrigue, and inform an audience. The journal's primary aim is to cultivate scholarly community and intellectual curiosity by featuring multidisciplinary perspectives, accepting articles from subjects including, but not limited to: Anthropology, Art, Biology, Business, Chemistry, Communications, Education, English, Modern Languages, Gender Studies, Sciences, Sociology, International Studies, Law, Mathematics, Philosophy, Psychology, and Religious Studies. *The Compass* endeavors to build an intellectual collaborative community that promotes the circulation of research and ideas.

Submission Guidelines

The Compass accepts scholarly works from current undergraduate students as well as scholarly work produced by recent alumni created during their schooling. The scholarly journal also accepts artistic works driven by research that are scholarly in nature. Painting, sculpture, and video theses are examples. These should be accompanied by a written component. Students from all colleges and universities are encouraged to submit.

When submitting, please include papers formatted in Chicago style with a bibliography. End notes should be included in place of footnotes. Fill out the online Submission Form and then e-mail your document as an attachment to thecompass@arcadia.edu. Although it is not required, we highly encourage students to have their professor submit a Professor Approval Form to aid the editorial board during the selection and review process. Written submissions should be sent as a Microsoft Word document and should be accompanied by a 30 word summary description to be used as a teaser on the website. We will review submissions of any length, but we can only review one submission per applicant per issue.

Submissions are accepted on a rolling basis. Each submission will be reviewed by a member of the Extended Review Board comprised primarily of current Arcadia faculty. Once a piece has been designated as scholarly by the extended review board, it is then reviewed by at least one member of the Editorial Board, comprised of Arcadia undergraduate students, who will recommend acceptance, acceptance with revisions, or rejection. The decision will then be communicated to the submitter along with any changes that may be required. Additional information may be requested after acceptance including a photo and a short biography.

Questions? Contact *The Compass* staff at thecompass@arcadia.edu.

Foreword

Perhaps there is nothing more affirming in academia than the acceptance of one's work as a publishable material by those who hold authority in the field. To be known as a great teacher has its place, a respectable place indeed. However, one whose work is accepted as a contribution to the stock of knowledge enjoys a special place among scholars. From my experience, most junior faculty members who fail to earn tenure at their institutions do so because of inadequate publications, a situation that is commonly known among academicians as "publish or perish." As a Chief Academic Officer, I am also aware that students who publish in peer-reviewed journals during their undergraduate/graduate education are most likely able to publish in refereed journals at the beginning stages of their professorial careers.

It is with this thought in mind that I am thrilled and delighted to read the works published in the COMPASS, Arcadia's Undergraduate Peer-Reviewed Publication. Students whose works are featured in the COMPASS are building their résumés for graduate education and, most certainly, for academic careers should that be their passion in life. I am grateful to the leadership that brought the idea of the COMPASS to fruition. I am particularly thankful to the editorial board for ensuring a high quality collection of student works.

The essence of scholarship lies in making public the excellence of one's work for others to critique. Public critiquing of contributions to the stock of knowledge is critical in ensuring the scholastic excellence. Our calling as scholars is to intellectualize, meaning logical but peaceful confrontations of view-points, ideas, suppositions, facts—all in our quest for truth—truth that is in essence polymorphic. A good university, therefore, is a sanctuary for free intellectualization, but a good university is only a part of the universal community of scholars. Hence at Arcadia, we strive to prepare students for works that merit public scrutiny beyond the walls of the university. The creation of the COMPASS that is housed within the world-wide-web, searchable from anywhere in the globe, reflects our collective effort to expand the reach of our students, extend their intellectual horizons, and instill and solidify the courage of the nascent who must, of necessity, throw themselves at the mercy of the crucible of the assay room in the marketplace of ideas.

One whose work is, therefore, reviewed and published by experts, has or ought to have earned recognition that is based on the demonstration of one or more of the following: conceptual elegance, theoretical simplicity, logical coherence, explanatory power, methodological sophistication, and fidelity with the contemporary cannon of truth. For this reason, not all that is written is worthy of our reading, and not all that is read is worthy of recognition by disciplinary experts. Congratulations to all whose works are and will be featured in the COMPASS.

Dr. Steve O. Michael
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'She Lived Happily for Seven Years': How Official Corruption in China May Provide Lessons for America

By Lucy Jimenez
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China no longer tries to conceal its treatment of political dissidents. In early 2011, the Communist regime decided once again to crack down on those who dared to protest government behavior.[1] Officials had numerous human rights activists arrested or detained without due process, in an effort to prevent them from criticizing the government any further. Between February and April 2011, when "anonymous calls for 'jasmine rallies' in China began circulating on the internet," 26 people were arrested for inciting subversion of state power, 30 disappeared altogether, and 200 were detained with their movements completely restricted.[2]

Probably the most well-known of all detained dissidents was Ai Weiwei. For years, Ai Weiwei has used his art to address the corruption of the Chinese communist government.[3] Ai was arrested for economic crimes and pornography in April 2011 as he was waiting to board a flight to Hong Kong. This was his second arrest. In August 2009 he was arrested and beaten so severely that he had to have emergency brain surgery; all because he was testifying for Tan Zuoren, a fellow investigator of the Sichuan earthquake school collapse.[4]

The 2008 Sichuan earthquake devastated the Sichuan province of China on May 12, 2008, killing an estimated 69,000 people. To most, the greatest consequence of the natural disaster was that over 7,000 schoolrooms collapsed instantaneously, killing somewhere between 5,000 and 10,000 students (most of who belonged to one child families).[5] Because of the disproportionate number of school collapses in comparison to older buildings nearby, many reports blamed corrupt local government officials and construction companies for being negligent in the construction of the schools, ignoring civil engineering standards, saving materials and taking shortcuts while pocketing the surplus. After so many online and news media postings about the "tofu schoolhouses," as they were being called, the Beijing government promised to investigate into the allegations of shoddy construction and corruption.[6] However, instead of following through with this promise, their attention instead seemed to be on silencing protesting parents and locals, and critical foreign journalists. Their silencing efforts included offering monetary compensation (equivalent to $8,800 USD) to the parents affected by the tragedy in exchange for their vow of silence;[7] ordering the Chinese news media to cease all reporting on the collapses and to focus instead on uplifting stories; and arresting anybody who continued to openly criticize or question what had happened, like Liu Shaokun, a Sichuan school teacher. Shaokun was just one of dozens imprisoned and ordered

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[1] Keith B. Richburg, "Chinese Artist Ai Weiwei Arrested in Ongoing Government Crackdown," The Washington Post, last modified April 3, 2011, http://www.washingtonpost.com/world/chinese-artist-ai-wei-wei-arrested-in-latest-government-crackdown/2011/04/03/AFHB5PVC_story.html.

[2] Ibid.

[3] JP McMahon, "Ai Weiwei's 'Remembering' and the Politics of Dissent," SmartHistory –Khan Academy, accessed October 28, 2012, http://smarthistory.khanacademy.org/ai-weiwei-and-the-politics-of-dissent.html.

[4] Austin Ramzy, "Ai Weiwei Held in Sichuan," Time Magazine, last modified August 12, 2009, http://world.time.com/2009/08/12/ai-wei-wei-held-in-sichuan/.

[5] "Sichuan Earthquake," The New York Times, last modified May 6, 2009, http://topics.nytimes.com/top/news/science/topics/earthquakes/sichuan_province_china/&quot.

[6] Richard Spencer, "China Earthquake: Building Work Blamed for Child Death Toll," The Telegraph, last modified May 16, 2008, http://www.telegraph.co.uk/news/worldnews/asia/china/1969382/China-earthquake-Building-work-blamed-for-child-death-toll.html.

[7] Edward Wong, "Grieving Chinese Parents Protest School Collapse," The New York Times, last modified July 17, 2008, http://www.nytimes.com/2008/07/17/world/asia/17china.html?_r=0.

to serve one year of re-education through labor, after publishing pictures online of the demolished school buildings.[8]

Ai's first project about the earthquake was an investigative documentary that aimed to expose the cover up by the Chinese government. His project helped to reveal what most people were speculating – that the school buildings were not constructed to code, and were in fact the reason behind the deaths. Ai aimed to compile a list of all the students killed in the earthquake, since the government would not release the actual number of deaths or the names of the victims. A little less than a year after the earthquake, Ai's list had 5,385 names. He published the names as well as numerous articles documenting the investigation on his online blog (which was shut down by authorities a few weeks later).[9]

While he was in Sichuan he saw remnants – mainly backpacks and school supplies – of the thousands of lives lost; the very same lives that Ai said would "disappear within the state propaganda" and cause everybody to forget everything.[10] He was inspired to create the installation piece So Sorry, which he constructed from nine thousand children's backpacks. They spelled out a quote from a mother whose child died in one of the schools. The line read: "She lived happily for seven years in this world" in Chinese characters. Ai said the title of his show referred to "the apologies frequently expressed by governments and corporations when their negligence leads to tragedies" such as this one.[11] In April 2011, two months before the opening of the exhibit, Ai was arrested. He was formally charged with suspected economic crimes (a.k.a. tax evasion) and pornography. His family did not hear about his detention or his whereabouts for 81 days.

Many people believe that this crackdown, which was deemed "one of the most repressive campaigns in more than a decade," was being staged because the Chinese government was and continues to be fearful that the democratic uprisings in the Middle East and Africa would spread to China, threatening its stability.[12] China targeted artists, writers, and bloggers who had been continually pushing the boundaries. Even though China has major firewall systems in place to censor information and alternative viewpoints, Ai is just one of many who figured out how to use an internet connection from outside of the country to access forbidden sites like Twitter. Ai uses Twitter to speak out about important global values, like freedom of expression and creativity. The outlet has enabled him to share his thoughts with 72,000 followers, most of whom are also suffering from the oppression of the Chinese government.[13] In February 2011, Ai posted on his Twitter page about the Jasmine rallies – a major online campaign in China that called for Arab Spring style uprisings: "I didn't care about jasmine at first, but people who are scared by jasmine sent out information about how harmful jasmine is often, which makes me realize that jasmine is what scares them the most. What a jasmine!"[14] A few days later, the police picked him up at the airport.

Ai's art, and by extension his arrests, have gotten a lot of recognition, both internationally and domestically. When Ai was arrested in 2011, the United States government and the European Union demanded his immediate

[8] Tania Branigan, "China Detains Teacher for Earthquake Photos," The Guardian, last modified July 30, 2008, http://www.theguardian.com/world/2008/jul/31/china.chinaearthquake.

[9] Juyuan, "The Sichuan Earthquake: Salt in their Wounds," The Economist, last modified May 14, 2009, http://www.economist.com

[10] McMahon, "Ai Weiwei's 'Remembering' and the Politics of Dissent"

[11] Ramzy, "Ai Weiwei Held in Sichuan"

[12] Keith B. Richburg, "Chinese Artist Ai Weiwei Arrested in Ongoing Government Crackdown," The Washington Post, last modified April 3, 2011, http://www.washingtonpost.com/world/chinese-artist-ai-wei-wei-arrested-in-latest-government-crackdown/2011/04/03/AFHB5PVC_story.html&quot.

[13] Ibid.

[14] Ibid.

release. The international arts community led demonstrations and 24-hour peaceful sit-ins; they also organized petitions, collecting more than 90,000 signatures. The Tate Modern in London, the home to Ai's Sunflower Seeds exhibition, displayed a large sign on their façade that read "Release Ai Weiwei."[15] And in 2012, American film-maker Alison Klayman, made Ai the subject of her documentary film called Ai Weiwei: Never Sorry.

Ai also felt incredible support from his own people when the government served him a $2.4 million dollar fine for tax evasion, to be paid in full within fifteen days, with $31,640 added each day it was late. His fans sent donations via PayPal; they wrapped cash around fruit and delivered it to his doorstep; they folded money into paper airplanes and sent them flying over the wall into his yard.[16] While the donors ranged from rural Chinese farmers to men driving Mercedes, he also had the support of other Chinese activists, like food-safety activist Zhao Lianhai, whose infant child became ill after consuming formula that had been contaminated by the chemical melamine (Note: The 2008 Chinese milk scandal was another result of corruption in China, when the chemical was added to milk to cause it to appear to have a higher protein content. China reported an estimated 300,000 victims, with six infant deaths, and 860 infant hospitalizations). Ai's thousands of supporters helped him pay a 8.45m yuan bond (about 1.2 million dollars), allowing him to challenge the charges. Critics accused Ai of "illegal fundraising."[17] In October, 2012 the court rejected his appeal against the charges. The government continues to closely monitor him and has revoked his passport and freedom to travel.[18]

Ai's brave fans also came together in support around the Pornography charge levied against him after he posted two photographs online of himself completely nude, except for a toy alpaca strategically placed. The photos had a caption that translates into "Grass mud horse covering the middle." This term can apparently be interpreted in Chinese as "F*** your mother, the party central committee."[19] When Ai was questioned about the photographs by police, he said that he took the photographs as a way to "remove fear and a feeling of isolation" – two defining characteristics of "certain societies."[20] A website was created called "Ai Wei Fans' Nudity – Listen, Chinese Government: Nudity is not Pornography" where people posted nude photographs of themselves. Wen Yunchao, who showed solidarity by baring all for the camera, said he and others chose this extreme method of protest because "the interpretation of people's naked bodies in itself is an individual freedom and a form of creative freedom…we don't see any pornographic elements in (Ai's) photographs."[21]

In October, 2012 Ai released his latest piece of protest art. His cover of the dance video called "Gangnam Style" originally released by the Korean popstar, Psy, shows Ai dancing in a goofy way, gyrating alongside both Chinese and Western friends. The shots of Ai intercut with shots of horses, money, and expensive cars.[22] Ai has always said that freedom, whether it's of expression, of creativity, or – as this video shows – of the ability to behave in

[15] Ben Davis, "Leaders of the Tate, MoMa, The Guggenheim, and Other Top Museums Join Art Figures in Demanding that China 'Release Ai Weiwei,'"ArtInfo, last modified April 8, 2011, http://www.blouinartinfo.com/news/story/123550/leaders-of-the-tate-moma-the-guggenheim-and-other-top-museums.

[16] Evan Osnos, "Ai Weiwei's Paper Planes," The New Yorker, last modified November 8, 2011, http://www.newyorker.com/online/blogs/evanosnos/2011/11/ai-weiweis-paper-planes.html.

[17] Shayoni Sarkar, "China's Ai Accused of 'Illegal Fundraising' Following Tax Bill," The Asian Correspondent, last modified November 7, 2011, http://asiancorrespondent.com/69045/chinas-ai-accused-of-illegal-fundraising-following-tax-bill/.

[18] Tania Branigan, "Ai Weiwei Firm to be Closed Down by Chinese Authorities," The Guardian, last modified October 1, 2012, http://www.theguardian.com/world/2012/oct/01/ai-weiwei-firm-closed-china.

[19] Adam Clarke Estes, "More Theories on Ai Weiwei's Arrest: Nude Photos, Plagarism," The Atlantic Wire, last modified April 11, 2011, http://www.thewire.com/global/2011/04/nude-photo-plagiarism-ai-weiwei-arrested/36536/.

[20] Sui-Lee Wee, "Chinese Strip Down for Ai Weiwei Amid Porn Investigation," Reuters, last modified November 21, 2011, http://www.reuters.com/article/2011/11/21/us-china-dissident-idUSTRE7AK0FS20111121.

[21] Ibid.

[22] "Ai Weiwei Does Gangnam Style," YouTube Video, 4:16, posted by 'Triplenickel,' October 25, 2012, http://www.youtube.com/watch?-feature=player_detailpage&v=n281GWfT1E8.last modified.

whatever outrageous, silly way he wants, is the most important value to him. Although the majority of the video appears harmless and fun, Ai does inject critical undertones, in an effort to "wake up the largest nation in human history."[23] Ai reuses the phrase of his nude photographs, "Grass Mud Horse," to title his video, and includes several shots of himself with handcuffs, which seems to be an obvious reference to his own incarceration, and to how ineffective the government's persecution against him has been.

Even though some may interpret the support for Ai as a sign that the Chinese people may finally challenge the government; and though some reports say that people in China are increasingly imitating Ai's outspoken approach; and furthermore, even though Ai himself says that these protests make him feel like "young people still have some conscience" – the total number of his supporters is incredibly small when compared to China's vast population. While some say the mainstream public in China remains opposed to "radical and confrontational political stances," preferring the status quo, it seems more likely that people are afraid of the consequences that result from open dissent.[24] [25]

So why is corruption in China important to the American people? In this country, it would be impossible for companies to get away with adding toxic chemicals to the food products, or for them to disregard safety codes while building children's schools. In the United States, we do not let big corporations profit at the expense of our safety.

Wait a minute…

In September 2012, contaminated injections from the New England Compounding Center resulted in an outbreak of fungal meningitis that killed 34 people. The investigative report concluded that both state and federal regulators were to blame, for having allowed "bad actor" NECC to remain open, after over a decade of repeatedly risking public health.[26] On the food safety front, in 2008, several hundred people in Oklahoma became victims of the virulent E. coli bacterium known as 0111, of which harmful effects include bloody diarrheal illness, kidney failure, heart failure, and death. 0111 is one of six strains that food-safety experts say are increasingly appearing in meats and other food products in the U.S. It took the Obama administration more than two years to officially regulate the six E. coli strains, even though the bacteria had already infected 113,000 people in the U.S., resulting in 300 hospitalizations a year.[27] Until the decision to regulate the six strains, federal inspectors were only required to screen one E. coli strain. According to Newsweek, the delay in updating our food safety requirements by increasing screenings, for example, is just one of several potential weaknesses identified by an investigation of America's safety net against food poisoning and bioterrorism that the magazine carried out in 2012. The review found that USDA inspectors are "stretched so thin," that they frequently miss required plant inspections, particularly in the Northeast.[28] Also, inspectors check only about one percent of the food shipped into the U.S. from foreign countries, and only about 25% of domestic plants a year. Representative John Dingell of Michigan,

[23] Blake Gopnik, "Ai Weiwei Does 'Gangnam Style' to Make a Point About Freedom," The Daily Beast, last modified October 25, 2012, http://www.thedailybeast.com/articles/2012/10/25/ai-weiwei-does-gangnam-style-to-make-a-point-about-freedom.html.

[24] Sui-Lee Wee, "Chinese Strip Down for Ai Weiwei Amid Porn Investigation," Reuters, last modified November 21, 2011, http://www.reuters.com/article/2011/11/21/us-china-dissident-idUSTRE7AK0FS20111121.

[25] Shayoni Sarkar, "China's Ai Accused of 'Illegal Fundraising' Following Tax Bill," The Asian Correspondent, last modified November 7, 2011, http://asiancorrespondent.com/69045/chinas-ai-accused-of-illegal-fundraising-following-tax-bill/.

[26] Associated Press, "Senate Seeks Answers from State Pharmacy Boards After Drug-Related Meningitis Outbreak," The Washington Post, last modified November 19, 2012, http://news.yahoo.com/senate-questions-pharmacy-boards-outbreak-214354705.html.

[27] Eve Conant, "America's Dangerous Food-Safety System," The Daily Beast, last modified Sept. 13, 2011, http://www.thedailybeast.com/articles/2011/09/13/food-safety-system-endangers-americans-due-to-lack-of-inspectors-budget-cuts.html.

[28] Ibid.

a fierce advocate for tougher food safety laws is certain that "a lot more people are going to have a bellyache and die" before things get better.[29]

Ai Weiwei mocks Chinese federal officials for delivering empty apologies after disasters, but at least they make some attempt to express regret, even if it's insincere. Perhaps the American people are due an apology from the government after these public health disasters.

So is China actually the model for America's turn in the wrong direction? Over five decades since corporations caused the collapse that led to the Great Depression, Americans gradually built up their government structure, putting in place labor, environmental and food and drug laws, in response to over-reaching corporations and greedy executives; and now, the government is talking about dismantling that system, by gutting the Environmental Protection Agency, stripping down the Department of Education, and getting rid of labor unions. So, maybe instead of criticizing China for being backwards, America should make an effort to draw lessons from the disasters there, like the milk scandal, the 2011 high-speed rail crash, in which 38 people were killed and 192 were injured, and the school collapses – all caused by corruption and greed, so as to best protect its own children from the fatal consequences of such corruption.

In a 2012 CNN Special, Ai Weiwei provides the Chinese perception of a regressive America: "Many here believe America has lost the credibility it once had on the world stage. Unlike the 1960s or '70s, when America had a more convincing claim as the moral arbiter of the world, many Chinese officials now believe the United States is only concerned with its own economic gain."[30] He said that while the Chinese people desire democracy, they are hesitant to adopt the system of the U.S. – in which "a vast number of voices are drowned out by others" – because it does not seem to be engendering progress for Americans.[31] He referenced our recent election, specifically
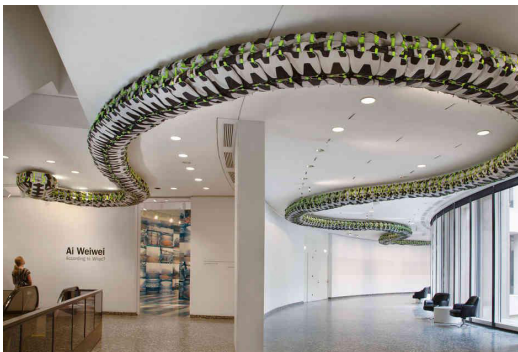
Ai Weiwei, Snake Ceiling, 2009. Installation made from children's backpacks.

Photography by Mindy Tom.
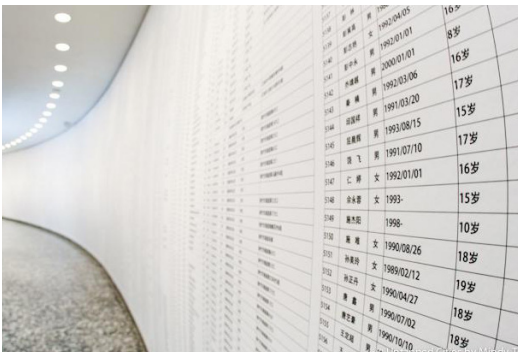
Ai Weiwei, Names of Student Earthquake Victims Found by the Citizens' Investigation, 2008-2011.

Inkjet print. Photography by Mindy Tom.

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[29] Conant, "America's Dangerous Food-Safety System"

[30] Ai Weiwei, "Ai Weiwei: Despite Flaws, America Should be Proud," CNN, last modified November 6, 2012, http://www.cnn.com/2012/11/05/opinion/ai-weiwei-us-election/.

[31] Ibid.

how we allow wealthy individuals and corporations to pour outrageous amounts of money and advertising into the campaigns, as an example of how our democratic system has been tarnished. His description of these campaigns, "Mere showcases, extravagant yet empty – and the time, money and energy spent on the grand spectacle could have been used to solve specific problems for Americans" echoes his critique of the 2008 Beijing Olympics, which he described as, "A fake smile, an elaborate costume party with the sole intention of glorifying the country," unable to "bring joy or happiness to its people."[32][33]

Though Ai's life has had its heartbreaking and painful moments, he continues to value and reflect upon them all through art. Before the opening of his current show titled Ai Weiwei: According to What, which will be traveling around the U.S. throughout 2013, Ai said that it is the adversities he faced in China that allow him to naturally conceive of works that challenge beliefs and question established assumptions.[34] The show tackles similar themes as those taken on in the past, but Ai has assumed a new strength. Power rests in a large coiled snake which hovers on the ceiling above. The serpent is made from a familiar object: children's backpacks, this time varying in size to represent the differing ages of the earthquake victims. In another room Ai presents the final list in black and white, of all the children who died. In this piece, the painful truth prevails.
Rather than judge China's backward behavior, perhaps Americans need to open their eyes to the growing resemblance between the two nations. Ai points out a significant similarity that deserves recognition and attention: "The people in both nations share a sense of hopelessness; they feel empowered and disappointed at the same time but on different matters. No matter the country or system, it's clear that the relationship between the masses and their leaders must be transformed."[35]

[32] Weiwei, "Ai Weiwei: Despite Flaws, America Should be Proud"

[33] Ai Weiwei, "Ai Weiwei: China Excluded its People from the Olympics. London is Different," The Guardian, last modified July 25, 2012, http://www.theguardian.com/artanddesign/2012/jul/25/china-olympics-london-ai-weiwei.

[34] "Ai Weiwei: According to What? Artist Statement," Hirshhorn Museum and Sculpture Garden, accessed October 20, 2012, http://www.hirshhorn.si.edu/collection/ai-weiwei-according-to-what/#detail=/bio/ai-weiwei-according-to-what-artist-statement/&collection=ai-weiwei-according-to-what

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Narrative Rising

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In recent years television has become infamous for making the likes of Snooki famous. At the same time, the late twentieth century onwards has been one of television's brightest stretches, an ongoing era of narrative that consists of more than arguing about a show's romantic leads, chuckling at stereotypes played for laughs on sitcoms, and listening in awe to a wise, loner detective solve his case in the final ten minutes. All of a sudden, viewers have to remember what happens from week to week, look up charts online to keep track of characters and their allegiances, feel compelled to buy t-shirts with quotes and logos plastered on the front. New technology has made that kind of commitment viable but it is these narrative shows that deserve all the credit for generating such strong fandom responses. The industry is taking notice, too, realizing the profit and loyal audience that comes from airing programming with a little more depth than the typical standalone-episode dramas or comedies. Paid cable may have gotten there first, when the widely considered leader of the pack, The Sopranos, first premiered in 1999, but now basic cable and network channels are moving in pursuit of this growing television trend. The question is, what exactly makes up this elusive narrative format, and why does it reap so much popular and critical appeal?

Jason Mittell identifies narrative television as a multifaceted entity which emerged from its episodic and serial predecessors as a hybrid, resisting and containing elements of both. To label it as one or the other would be to reduce matters into something too clear-cut, for "…narrative complexity cannot simply be defined as prime-time episodic seriality; within the broader mode of complexity, many programs actively work against serial norms but also embrace narrative strategies to rebel against episodic conventionality." Serial norms could include the popular holding off of a game changing event until halfway through the season, while an example of episodic conventionality would be the convenient resolution of all conflicts by the end of the hour. These story decisions do not automatically indicate a bad show, and can be found in many beloved ones, but are at times cliché. Mittell considers narratives to use serial formats but in a more advanced and worthwhile way, unlike the original soap operas, where the slow panning out of information was more of a means to fill up time, when soaps could air as many as five times a week, than for any kind of real payoff of the tension generated. With narrative television, there is a reason behind what information is given out when and surprising twists on expected actions: a seemingly main character might be killed off in episode two, or a problem that appears like it will disappear never stops plaguing a show's protagonists with haunting consequences. This lack of neat and tidy conclusions adds to the realism of narratives, as well as the difficulty in writing and maintaining them. Moreover it earns them a higher reputation for excellence, a reputation that has only grown over the years as the format has changed and improved.

These transformations, including the adapting and combining of old formulas to fit new tastes, are tracked in Angela Ndalianis', chapter of the book, The Contemporary Television Series, called, "Television and the Neo-Baroque."[1] Using five prototypes defined by Italian professor, Omar Calabrese, in his book, Neo-Baroque: A Sign of the Times, and providing twentieth century and modern television show examples for style comparison, she delivers a classifying system that ranges from the episodic (singular episodes where the plot finishes at the end) to the more serialized show (where multiple storylines can continue throughout a season or the entire show's run).[2] She generally finds that television has followed a chronological, linear progression towards more serialization, with some overlap between the forms when the defined limits that separate them weaken. For instance, she

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[1] Ndalianis, Angela. "Television and the Neo-baroque." In The Contemporary Television Series, edited by Michael Hammond and Lucy Mazdon, 83-101. Edinburgh, Scotland: Edinburgh University Press, 2005.

[2] Calabrese, Omar. " Neo-baroque A Sign of the Times." In The Contemporary Television Series, edited by Michael Hammond and Lucy Mazdon, 83-101. Edinburgh, Scotland: Edinburgh University Press, 2005.

describes how shows from the fifties and sixties, like I Love Lucy, were designed where, "…each episode repeats the same main characters and remains self-contained…." It was after the seventies that she notes serial shows, like Dallas and Hill Street Blues, as starting, which, "… retain[ed] historicity and progress[ed] through the focus on characters that develop[ed] from episode to episode."

On the one hand, it is useful to see television formulas in structuring out delivery of information broken apart by these small variables. It certainly offers an alternative to the two extremes of episodic and serial, in which cases there is no gradual progression from one type of storytelling to the other. Where the idea of these prototypes falls apart is in the fact that it can be very difficult to decide in which group a show fits, as multiple categories seem appropriate. There are also instances where the show itself never stuck to one prototype, changing over time into something different and more complex. Ndalianis, to her credit, does not shy away from these anomalies but admits the occasional difficulty in classifying shows that can fit into more than one prototype. The up-frontness is admirable but does not prevent the complication from hurting the credibility of a dividing system that cannot divide without debate.

Still, it is a worthy effort that starts off with a strong, more original idea behind the motivation for the creation of more serialized show. Ndalianis identifies the format's ability to fend off competing media formats as a motivation to create more of them. With its cliffhangers and ability to cultivate audience attachment, serialization continues to keep viewers compelled and excited to return week after week, not to mention after long hiatuses, when a less gripping show would be forgotten. She points out that since the 1940s, when television first started, the medium adopted a pointer from comic book production, which had found success after coming up with superheroes towards the end of the 1930s, that it was common sense for television to depend on an ongoing narrative layout. By providing audiences with regular protagonists, as well as continuous plots, there was a better chance these made-up worlds would become a part of their viewers' daily lives.

For example, by working under a "cliffhanger" sense, long-form stories tactically hold off finality. In its place, the people watching or reading are hooked on a singular storyline or number of storylines which remain unanswered by the end of one episode, which motivates fans to come back for future episodes. This does not mean there are no stand-alone episodes in narratives. When they do occur they are often set around allowing viewers to have some fun seeing established characters placed in unusual situations, learning more details about their personalities which can change and adds nuance to how their decisions are perceived in past and future scenes. These episodes may not be as necessary for the long-term storyline but can be a breather for when things get too intense and a break is needed before the next big dilemma unfolds. Serialization simply means that episodic is no longer the only option. A scene's pay-off need not be immediate.

When it does finally occur, though, as Jason Mittell notes in his other essay, "Previously On: Prime Time Serials and the Mechanics of Memory," the emotion of being "surprised" by the deed of recalling is rather pleasant. [3] It gratifies the lasting fans' data gathering whilst inciting the deluge of remembering from the turning-on of such recollections. That kind of enjoyment is not easy to picture functioning in "non-serialized formats" since the condensed styles of film and literature do not permit enough "time" while ingesting the storyline to allow the practice of collecting, disregarding, and remembering again necessary to manufacture "surprise memory," defined as, "…the moment of being surprised by story information that you already know, but don't have within working memory." This works exceedingly well for television because the story is going to continue over a greater period of time. Character attachment becomes more prominent because they are more familiar, followed for years by fans on screen. Thus when they are put in danger, the storylines become direr since the repercussions

[3] Mittell, Jason. "Narrative Complexity in Contemporary American Television." The Velvet Light Trap, no. 58 (2006): 29-40. http://dx.doi.org/10.1353/vlt.2006.0032.

of injury can act out in future episodes, unlike with a film or novel where the consequences do not always need to be addressed because the story stops. Characters are killed off and/or replaced on television because the show still continues without them.

Likewise, from an economic standpoint, Ndalianis recognizes the benefits of continuing plot points in that, "Even when part of the same conglomerate, subsidiary companies must still vie for audience attention by offering their own media-specific experiences, and they [television creators, writers, etc.] attempt to ensure success and a faithful audience by relying on a serial logic." Since events are on-going, viewers' desire not to miss the next episode, for its carry-over material from those previously aired, can lead to television being prioritized over unfamiliar (and therefore not yet invested in) movies or other media when scheduling conflicts arise. Mittell mentions in his essay that viewers are inclined to welcome intricate shows with far greater ardent and devoted expressions than the majority of traditional "television," employing these programs as the foundation for strong enthusiast groups and energetic comments to the "television industry" (markedly so at times when their shows are at risk for termination).[4] From a monetary perspective, according to Mittell, the increase in the number of different channels has caused narrative television to become more desirable by allowing small cult supporters to be considered sufficient enough for continuation.[5] Since big numbers are not easy to come by when there are so many channels and programs, the trick is to look at everything as a comparison; a show's labeling as "success" depends more on how well it is doing compared to a different network's scheduled fare. Members of passionate fan groups consistently tune in and will not switch to competitors' offering during the same time slots. It is their reliability that makes a hit show in today's competitive television market, where multiple networks are fighting for the same people's attention. A dependable viewership is one of the best outcomes they can ask for, certainly preferable to the worst outcome of viewer numbers dropping.

While I want to promote narrative television found predominantly on cable networks, where limited to nonexistent commercial breaks makes narrative already something outside the norm, Michael Newman, who wrote, "From Beats to Arcs: Toward a Poetics of Television Narrative," spends his time praising the prime time serials (with their standalone episodes and character arcs) that appear frequently on network channels (NBC, ABC, CBS, and FOX).[6] He makes the statement that this is not a judgment of "quality" and that, "Programs that seem quite different from one another may still share their basic storytelling principles," with which I agree. Both cable and network shows can be fantastic and as Mittell himself contends, "Arguably, the pleasures potentially offered by complex narratives are richer and more multifaceted than conventional programming, but value judgments should be tied to individual programs rather than claiming the superiority of an entire narrational mode or genre."[7] Nonetheless, narratives hold much of the praise right now and I want to address what accounts for their likeability over the more familiar procedurals (episodic crime dramas) and serials viewers are accustomed to seeing. While narratives may be more complex and multilayered, Newman disputes, nevertheless, that a focus on "openness" falls short of a lot of what makes "television's evening serials" captivating. Every "episode" of a prime time serial cannot wrap up every plot line, but rarely at the cost of forfeiting closure and logic, rarely in a manner which encourages "textual" unsteadiness or extreme, "modernist" gaps.

Mittell asserts that how the story is told is equally important to the actual story itself, where, "…the operational aesthetic [is] at work– we want to enjoy the machine's results while also marveling at how it works."[8] In the

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[4] Mittell. "Narrative Complexity in Contemporary American Television."

[5] Ibid.

[6] Newman, Michael Z. "From Beats to Arcs: Toward a Poetics of Television Narrative." The Velvet Light Trap 58 (2006): 16-28.

[7] Mittell. "Narrative Complexity in Contemporary American Television."

[8] Ibid.

essay, "Re(de)fining Narrative Events," Porter, Larson, Harthcock, and Nellis provide insight into how deliberate each part of an episode is with their discussion of the Scene Function Model, which considers the purpose of individual scenes within an episode or show as a whole.[9] Demonstrating how the model works with an episode of NYPD Blue, they divide the scenes into various types of satellites (character moments or setting details that add to the complexity of the narrative) and kernels (whose absence would change the entire direction of the show).

Following the same theme of analyzing television through its smallest component instead of the whole, Sean O'Sullivan, in his essay, "Broken on Purpose: Poetry, Serial Television, and the Season," explains how the rhythms of every "episode"– the broken up "scenes" occasionally no more than sixty seconds in length, which are connected in the sixty minute storyline—take viewers from one place or action thread to a different one making "parallels," language differences, and disruptions, in the style of poetry though forever making viewers observe the parts as parts, freelancers chipping in on a big production.[10] This battle, which O'Sullivan detects, causes viewers to become conscious of the cracked outer layer of the wording, causing viewers to mull over the numerous outcomes of every scene– not only its spot in a continuous narrative but its potential, inflectional, pictorial, or insular association with the previous and succeeding scenes. The scenes of "television" have contrasting storyline goals at the same time, as connections in a story thread (or narrative) and as particular representatives hitting against other scenes from different threads, similar to how poetry's words supply at the same time "meaning, numbers, and sounds." Ndalianis describes it as "episode" and complete show boundaries acting as a solution finder or maze escaper: to be able to comprehend the connotation of the complete, it is additionally prudent to put as one and comprehend the bearing of the numerous and contrasting plot portions which make up the complete show. Never is any one part allowed to be completely singular, like a poem, which is broken up into lines and rhyming pairs as much as it is interpreted for its message as a whole piece.

Meanwhile, Newman compares the format divisions of television's prime time serial to those of a feature film. Analyzing shows from different focal points (looking closely at precise scenes as well as from a distance at multiple-episode encompassing arcs), Newman explores the possibilities that this type of program offers viewers. Not only are narratives designed as smart economics for network heads, but they stand as a creative challenge for producers and writers, offering restrictions along with opportunities. One aspect he brings up is the typical procedure of dividing an episode up into quarters through commercial break placement.

There is no natural reason for the segmentation of the narrative to be in four equal portions with breaks each quarter-hour, but this formal arrangement serves a variety of interests, not least the economic one of interspersing advertisements at regular intervals during the broadcast,

But additionally, the simple reason that these pauses are expected by viewers, a comfortable routine repeated on multiple channels.

On the creative side, Newman makes the connection that in film and television the initial quarter establishes what is going on while the final quarter brings closure. The two quarters in between on a television show match up to the "second act" of a film: obstacle and advancement. "Television dramas" present issues in the initial quarter and conclude it with a revelation. "Characters" react to obstacle created by this revelation in quarter number two, observe the risk increase in quarter number three, and settle the issues in quarter number four. All of these mechanics are carefully chosen by narrative creators to generate certain reactions. In this case the enjoyment in

9 Porter, Michael J., Deborah L. Larson, Allison Harthcock, and Kelly Berg Nellis. "Re(de)fining Narrative Events." Journal of Popular Film and Television 30, no. 1 (2002): 23-30.

10 O'Sullivan, Sean. "Broken on Purpose: Poetry, Serial Television and the Season." StoryWorlds 2 (2010): 59-77.

something new forged from old tricks, unfamiliar versions of classic stories from which fresh derivatives seemed impossible.

"Television storytellers, more than their counterparts in literary, dramatic, or cinematic storytelling, are under an obligation to constantly arouse and re-arouse our interest," with a much faster release of continuing content. O'Sullivan considers how the normal amount of time given for taping an "episode" is a week and three days, with about a half a dozen pages being filmed each day; in comparison, films aspire to tape two pages at the most each day.[11] Such constraint puts forth more stress to condense and ad-lib, particularly in regards to how scenes are shot, with the consequence being a steady give and take concerning planned "meter of a scene" and the ultimate tempo. This makes sense considering movies are a one-time entity while episodes of a show recur for a weekly deadline. It is a matter of deciding where the limited time is needed to be spent most, as Newman emphasizes that not a single instant lacks a theatrical purpose, not one beat is superfluous with any of its companion senses nor deviating from the story line's advancing development. That is not to imply that all the scenes move the storyline forward in the usual manner. Many scenes are made up of responses over acts, notably on programs focused on connections between people. Nonetheless, they all have a purpose. Also, whatever cannot be focused on in an episode can be drawn out and given time to reveal itself later on.

O'Sullivan says that, "While some of the prosodic maneuvers I describe may recur, the laboratory of the thirteen -episode uninterrupted season in the last decade has played with the possibilities…." Much like the fourteen line sonnet, this constrained length of time for telling a narrative acts as a platform on which to map out the storyline accordingly, timing it out for the most entertainment value.[12] The pattern he identifies is that of the breaking up of the season into sections of 4-6-3 episodes. As he demonstrates with The Sopranos' first thirteen episodes, the season is laid out in ways, "…that correspond to, but also re-invent the motions and countermeasures of the sonnet: an initial experimental quatrain (episodes 1-4); two evenly spaced jarring interruptions, in episodes 5 and 10, each of which may be likened to a turn; and a closing tercet."

Though I had not considered this before, it's easy to recognize how relevant and frequent these divisions appear, especially where it pertains to the preliminary four episodes. On complex shows as these narratives usually are, not everything is going to necessarily make sense at first. Viewers have a lot to acclimate themselves to, and keep track of, whether it be numerous unknown characters or what is actually going on in this new environment. Each show has its own language and it can be very easy just to quit before you decipher it, out of frustration at not understanding everything from the start. That is why it is crucial to make it through the first four episodes of a show before making judgment because that fourth one is usually the sign of "now I know why everyone was raving about this show" or, "I now know what this show is about and it is not for me." When I watched The Wire for the first time, I thought it was a good show but was getting confused. Also, my adjective to describe it was "good." I was not yet convinced that it was going to be the great, revered program many television viewers and critics had branded it as. That fourth episode really confirmed what everyone else had claimed and I now utilize that viewing logic for all my shows, from Deadwood to Sons of Anarchy.

Another compelling idea that O'Sullivan puts into words is that the conclusion of an episode provides, indeed, an ending, but also a wish to go back and rewatch, because you figured something out or you know a scene you did not get the first time would make a great degree more sense with this additional knowledge.[13] It is a unique feature to narrative television, as you can truly get more or, at the least, something different out of every time

[11] O'Sullivan. "Broken on Purpose: Poetry, Serial Television and the Season."

[12] Booth, Paul. "Memories, Temporalities, Fictions: Temporal Displacement in Contemporary Television." Television & New Media 12, no. 4 (2011): 370-88.

[13] O'Sullivan. "Broken on Purpose: Poetry, Serial Television and the Season."

you watch an episode over again. Continuing his poetry analogy, no matter whether you label it as, "…meter and rhythm, spin and drive, or measure and countermeasure, both poetry and serial television explore this dialectic prominently through the tension between circular and linear patterns" with poems people may name the movement forward to the conclusion of every "line" as a developing one, as every "word" carries readers onward in place, in storyline buildup or "lyric" supplement; however the conclusion of the "line" frequently announces a revisit, "(a spin)," to the same degree as an ending.

Mittell discusses this dual role scenes play further, in that quality and prestige of narratives allows them to garner awards and DVD sales, complexities made for multiple viewings which allow fans to catch more details and comprehension each time they watch.[14] The optimum, or most thorough, viewers watch the show long term, and catch any inside references, but newcomers can get a general understanding as well, enough to decide whether or not they would enjoy going back and looking further into earlier seasons of the series. With new technology, they are easily able to catch up if they are so inclined.

This contrasts with many sitcoms and procedurals, where it is not ultimately necessary to follow the program in chronological order. New viewers can usually grasp what is going on without seeing previous episodes, or will be accommodated for with the reiteration of any necessary continuity information from the past needed to understand what is going on currently. This makes procedurals better fit for syndication, which Newman explains has economic perks business-wise, in providing a means to make money off of old material, but can also gain more viewers for newly airing episodes of a program. This has been proven with, "…the astonishing success of Law & Order repeats on A&E and TNT…" where their, "…impressive ratings in syndication [were] to the point that the audience for original episodes on the network might increase."

One possible reason for people hesitating to create narrative stories in the past is fear of ostracizing new viewers, for it is more difficult to put a show in syndication when there is a need or high preference for fans to watch the episodes in chronological order. Long-running gags and details may make for a good show but as a business, with the goal of making money, it is all about how many people watch, not quality. Mittell provided a different motive with his essay, "Previously On: Prime Time Serials and the Mechanics of Memory," in directing attention to the value of memory devices in narratives. Not always blatant or noticed, these devices aide viewers by enabling them to jump-in at any point in a show's run and still have grasp of what is going on or at the least be entertained.[15] For example, normally, according to Mittell, "visual" indicators are more understated as compared to conversation, acting not so much to bring audience members up to speed, having not seen an "episode," than incorporating more straightforwardly into a lifelike approach of "moving image storytelling."[16] For example, a character may be shown acting moody at work but when they return home there's a camera shot on a bouquet of white flowers and condolence cards. You can then assume that someone has died recently on the show, which explains for this person's bad mood. The "who" doesn't need to be known, only the understanding that this loss has deeply affected the person and they must not be close to their coworkers, because none of them appeared concerned or brought it up. Viewers may wish to look into the preceding episodes at a later time, but they won't need to in order to enjoy and follow the program in the present.

Memory devices also ensure viewers can remember important plot points long over time. Providing examples and shows where the devices have been utilized, he looks at multiple situations in which memory was emphasized (recap), clarified (voice over) and tampered with (flashbacks that change how viewers perceive present circumstances), together with new options available for dealing with narrative confusion (online fan web-sites,

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[14] Mittell. "Narrative Complexity in Contemporary American Television."

[15] Ibid.

[16] Ibid.

DVDs for multiple viewings, etc). By doing this he is able to envision how long-term storylines are able to keep viewers from getting overly frustrated by convoluted plots, while also ensuring they do not become bored by repeated reminders of what has already happened instead of moving forward. Mittell notes how managing a multi-season world is amply tough for "television writers" yet they must also confront noteworthy difficulties to make certain audience members can grasp what is going on without tumbling into puzzlement or monotony due to repetition.[17]

Jason Mittell's ideas crossover and complement those made by Paul Booth in his essay, "Memories, Temporalities, Fictions: Temporal Displacement in Contemporary Television."[18] Booth focuses on a specific aspect of narrative, temporal displacement, in which the typical linear format of television is replaced with time shifts (like flashbacks), alternate realities (like dreams) and character and viewer memory tampering to form more complex storylines.[19] What viewers have learned and what they have forgotten are played against them, to create interesting twists and unexpected occurrences. Using examples from American and British television shows, Booth explores how writers alter chronology to change the order in which viewers gather information about characters, learning tidbits after the fact which are enlightening and provide new perspectives. His purpose for writing was to take an in-depth examination of one appealing aspect of narrative instead of the structure as a whole, choosing a goal which would allow him to focus for a more detailed analysis of what one technique has to offer to television shows, a specialized topic on the subject.[20]

While Jason Mittell's look at flashbacks may overlap or not be as detailed as Booth's, it is when he talks about recaps and the balance between comprehension and boredom that he makes some strong points that are relevant in showing how narratives work. He describes the role of television recaps where, in only half a minute, the program prompts the viewer to recall whatever continuous storylines are necessary to be turned on into active memory to understand the "episode's" advancements. Nonetheless, the excerpts would practically be meaningless to anyone who had missed a majority of the past "episodes," as the scenes are too reduced to truly give sufficient explanation for inexperienced watchers. "Just as notable is what the recap omits, [like when a recap for the series, Veronica Mars, contains]…no reference to major characters Logan and Duncan– these characters do not appear in the episode, and thus can stay archived in long-term memory," so attention can be placed on what is pertinent.[21]

While the main action of story engrossment is understanding (where memory devices come into play), Rick Busselle and Helena Bilandzic's bring up in their article, "Measuring Narrative Engagement," that it is also helpful when viewers can identify with the characters or some feature of the storyline, since, "Narrative comprehension requires that a viewer or reader locate him or herself within the mental model of the story."[22] As Busselle and Bilandzic state, in the context of the diegesis (the show's world, including its setting, social context, and characters' views of what's normal and possible), "…a viewer should be able to understand the emotions of primary characters, even if they do not share those emotions," seeing things through their eyes and moral code.[23] If all of these are achieved, a show can gain mass appeal though it is easier said than done.

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[17] Mittell. "Narrative Complexity in Contemporary American Television."

[18] Ibid.

[19] Booth. "Memories, Temporalities, Fictions: Temporal Displacement in Contemporary Television."

[20] Ibid.

[21] Mittell. "Narrative Complexity in Contemporary American Television."

[22] Busselle, Rick, and Helena Bilandzic. "Measuring Narrative Engagement." Media Psychology 12, no. 4 (2009): 321-47. http://dx.doi.org/10.1080/15213260903287259.

[23] Ibid.

However daunting the task, basic cable channels still made a move towards that elusive perfect combination of features for the creation of shows that would position them on the production side of narrative television. Instead of comparing the opposite extremes of narratives on network television versus narratives on subscription cable channels, Anthony N. Smith looks into the middle ground of basic cable stations, where the melding of the two formats occurs. Focusing on AMC, Smith, in his essay "Putting the Premium into Basic: Slow-Burn Narratives and the Loss-Leader Function of AMC's Original Drama Series," reflects on some of the channel's new, original television dramas, like Mad Men and Breaking Bad.[24] Including quotes from directors and creators of these programs, he considers the economic benefits of this latest creative venture where plots are not rushed, in the style of HBO, but also need to include commercial breaks, like the majority of network and basic cable channels. He concludes that by building a reputation for quality programming and targeting a more wealthy, educated audience, AMC has been able to earn more money indirectly through growing advertiser interest, increasing viewership for its regularly scheduled film, and higher desirability to be included in cable provider's basic cable packages. Smith does not know, though, whether AMC's new narrative model will inspire other basic cable channels to follow suit or be temporary, as even their success has not stopped from AMC starting to branch out from their brand, throwing around the idea of adding reality shows and sitcoms to their line-up.

Jaime Weinman, too, wonders about the future of television. Having looked into the rise and growing popularity of serialized television shows over the contained, procedural format, where plots are wrapped up by the end of each episode, in his article, "Serial Storytelling," Weinman questions whether procedurals will eventually be dropped, or whether viewers will instead get tired and frustrated with serials.[25] Citing examples of various shows and providing quotes from members of both types of programs, along with a television critic, he links this trend of fan's growing interest in more realistic, drawn-out storylines to the fact that they are considered to be of a higher quality, allow for more investment in character (who are given time to develop) and can now be easily caught up on if missed.[26] However, despite this seeming preferment and appreciation of narrative, Jason Mittell concludes that intricacy has not beaten the usual style that makes up most television shows right now- typical situation comedies and dramas running currently greatly outnumber intricate stories.[27] The increasing success of narrative may have created an opening for a new norm in television line-ups to grow, but it is still unknown if stations are willing to take a financial risk by changing and committing to the format. After all, is that even what viewers want or are they content with narrative television as it is, a unique but minority format, forfeiting majority power to the still dominant television procedurals.

It is my opinion that there is a place for both in prime-time television. However, narrative needs to be allowed to have a bigger voice, especially on networks that are apt for a quick cancellation if the ratings do not immediately come in strong. It is a great time to watch television, but it is also a difficult time because, unless you are committed to a lifestyle of watching, as I am, you are going to have to choose between some great shows to watch. There are just too many to keep track of if you do not take the activity as more than an evening hobby. With new networks adding their dramas into the fray (A&E's Bate's Motel, Sundance's Rectify), the amount of shows to watch only grows higher. What cannot be allowed to happen is what is currently occurring on NBC, where many of their new dramas are failing and instead of replacing them with quality narrative shows they are resorting to reality shows and comedies that will never match the caliber of those that are now hitting their late years in the Thursday night comedy block (Parks and Recreation, The Office, etc.). Since it is often easier and cheaper to produce singing competitions or film "real" housewives in various cities, these are the shows that survive while

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[24] Smith, Anthony N. "Putting the Premium into Basic: Slow-burn Narratives and the Loss-leader Function of AMC's Original Drama Series." Television & New Media 14, no. 2;(2011): 150-66.

[25] Weinman, Jaime J. "Serial Storytelling." Maclean's, December 12, 2012. http://www2.macleans.ca/2012/12/12/serial-storytelling/

[26] Ibid.

[27] Mittell. "Narrative Complexity in Contemporary American Television."

good ones fail when they don't attract fans immediately. This should not be put up with. Even a strong cop or medical procedural, which NBC has been successful with in the past (ER, Law and Order), would be preferred. They are a common a sight on television, blending together due to similar concepts, but can at least claim to be well-made.

Like with 1970s Hollywood being known more for it ground-breaking pieces from "Altman, Scorsese, and Coppola" over the ordinary (and frequently more well-liked) typical tragedy movie, love yarn, and humor movie that stuffed movie theaters, Mittell thinks American television of the last two decades will be known as a time period of trying new stories, rebelling against the stands of what television is able to achieve. No one will remember Whitney, but they might recall the strong first season of FX's new show, The Americans. We have seen how television can be great as it has achieved time and time again. No longer is there any excuse for why it cannot only get better.

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There is Much to Learn From War Memoirs:
Dissecting With the Old Breed as a Historical Source

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With the Old Breed by Eugene B. Sledge is a war memoir of the Second World War; its personal account of war should be used as a reliable historical source. Typically, military memoirs have been seen as capricious sources of history because of the emotion, trauma, and personal affections that soldiers take from a battlefield. Sledge describes these attachments to battle and the experience of combat during the conflicts of Peleliu and Okinawa. He describes the actuality of war and how it wears on a soldier's spirit, mind, and body. This allows the reader to personalize the war experience. The description of war through a memoir can be used as an accurate account of what war is on the personal level. Historians can use war memoirs to understand what war is, without the ultimate experience of being in combat. It is a more accurate expression of what war is, on the ground and in the foxholes, than the typical history textbook that discusses a war's causes, courses, and consequences. These generalizations of war are suitable for learning the politics and maneuvers of war, but do not help historians gain an idea of what the battlefield is like for a soldier in combat. To assess the reliability of *With the Old Breed* as a historical source one must assess the memoir's weaknesses and strengths.

One weakness in using *With the Old Breed* as a historical source is that it is impossible fact check everything that Sledge writes about in his memoir. His story is a personal one and historians cannot go back in time to check if he saw exactly what he is writing in his memoir. For example, when Sledge discusses the incident where his lieutenant played a practical joke on him and his fellow soldiers, his lieutenant threw a grenade that he thought to be empty into a crowd of soldiers to scare the young men. However, the grenade was still somewhat full and threw some shrapnel at the soldiers. This incident cannot be fact checked by historians, mostly because it was an event that did not involve many people and an event that involved an officer acting incompetent, to say the least. Not many soldiers will jump at the opportunity to discredit a higher-ranking soldier and this would make it difficult for historians to gain more information on the episode.

However, just because a historian cannot validate every tale that Sledge discusses in his memoir does not mean that they cannot be used as a historical source. Historians must be able to derive truth from personal accounts of war. Since, Sledge is an eyewitness to the episodes he discusses in his memoir, historians can assume Sledges accounts are credible. Historians can use *With the Old Breed* as an accurate perception of the war through Sledge's eyes. Samuel Hines discusses that to establish credibility in a war memoir, a historian must identify, "whether the book speaks with a voice that is stubbornly distinct, telling us what it was like, for this man, in his war." Sledge does speak with a voice that is distinctly unique in *With the Old Breed*. He tells us what it was like for him in his war and therefore can be seen as a credible recollection of his view on his life during the war.

Another shortcoming that can be argued is that *With the Old Breed* does not deal with the bigger picture of World War II. *With the Old Breed* only discusses two major battles that Sledge was personally a part of, Peleliu and Okinawa. Sledge does not talk about any other battles or events that would be part of a broader discussion of World War II. For example, he does not discuss any part of the war effort in Europe or anything about the role that the home front played in the war. Sledge only discusses the parts of the War that of which he was personally a part, so this limits the perspective one would acquire from reading Sledge's memoir. This characteristic of memoirs certainly distinguishes them from typical history books; that is not to say memoirs fail to contribute from a historic perspective.

Typical history books deal with the larger scope of a war than *With the Old Breed* addresses; nevertheless this does not discredit what a historian can derive from Sledge's memoir. Traditional history books such as Allan Millett and Peter Maslowski's For the Common Defense deal with the broader scope of wars in history. For instance, when Millett and Maslowski discuss the battle of Peleliu they focus on the reasons for fighting, the casualty numbers, and gains the United States acquired after the battle. This approach to writing history is known as the "outcome" approach. This style of narrative history, as John Keegan notes, has as many limitations as Sledge's memoir does. Keegan argues that this typical approach to war does not accurately portray what war is really like. He states that the "causes and results" to military history does not fit in the discussion of actual combat because the soldiers that are doing the fighting at the time are just trying to survive and do not care about the larger scope of wins and losses. In some ways Sledge's memoir is a more reliable source for what war is like, than the typical history text because of the personal portrayal of war that Sledge composed.

Another reason that a historian could question the reliability of *With the Old Breed* is that war is traumatic and it changes the people who experience it. Like most soldiers before him, Sledge was changed by warfare. Therefore he is writing his memoir as someone different than the person that actually experienced the fighting. Samuel Hynes discusses this paradox in his book. He states that a war memoir is like an autobiography, but cannot be defined as one. He articulates that a war memoir cannot be an autobiography because the same person that experienced the war does not write it. Sledge experienced the war as a young man trying to get through the war with his life. Sledge wrote his memoir as an old man looking back on this separate life through a lens of safety and maturity. This paradox leads a historian to question the authenticity of *With the Old Breed* and war memoirs in general.

The enigma of war changing people should not persuade historians to dismiss *With the Old Breed* as a reliable historical source. People change through out their lives. Just because individuals can argue that someone is not the same person after a war does not mean that they cannot accurately remember what it was like to experience war. Historians should be able to use war memoirs for the simple fact that war is traumatic and does change people, so they should be able to remember what it was like for them vividly. Sledge discusses the traumatic experience of watching a marine deploy a flamethrower into a pillbox occupied by Japanese soldiers. Sledge listened as the Japanese soldiers screamed with agony until the silence of death swept through the area. Such a traumatic experience no doubt shaped the rest of Sledge's life and changed the person Sledge was. However, Sledge recalls this incident with detailed accuracy. This goes to advance the assumption that the trauma soldiers experience during a war add to the validity of a war memoir.

The final argument against *With the Old Breed* as a historical source is that it probably contains falsities and exaggerations. Sledge did keep a notebook during his time in battle but it would have been impossible to record experiences directly after they had happened. War is too chaotic and too unpredictable to stop and write down everything the memoirist is seeing in present time. Samuel Hynes argues that a memoir should be given special leniency. He states that war memoirs cannot be completely truthful because every person experiences the trials of war differently. He notes that memoirists, such as Sledge's, might have had temporary lapses in truth because of the inhumane experience of being in battle.

On the other hand, Hynes argues that war memoirs cannot be truthful unless they contain some amount of falsities. He states that, "memoirs speak each with its own human voice, as history does not, and they find their own shapes." Hynes is expressing that memoirs are written through a personal scope because it is a unique experience for that one person. *With the Old Breed* must contain some misrepresentations of truth, but they cannot be a reason to dismiss it as unreliable. Sledge did not intend on misrepresenting anything, he simply told the story that he experienced. Historians must use memoirs as a reliable source for the representation of a unique soldier in his or her unique experience of their war.

The concluding reason of why *With the Old Breed* is a reliable historical source is the simple point that war is tremendously alien to the normal citizen. Samuel Hynes states that the ordinary man has little authority in discussing what war is like. Men that did not experience war have no appreciation of what war was like and they could not begin to imagine what it was like for the people who experienced it. Hynes says, "war cannot be comprehended at second-hand, they say; it is not accessible to analogy or logic." For this reason historians have to use war memoirs, like *With the Old Breed*, as the best way of trying to understand the experience of war.

In summation, Sledge's memoir cannot be validated with specific facts, but it has to be seen as an accurate depiction of his unique experience. Sledge might not discuss the bigger picture of World War II, but he did not intend on explaining the whole war, he simply intended on explaining his war. Sledge might not have been the same person that he was when he wrote his memoir, but the trauma he experienced was still seen vividly in his mind. Sledges account might contain some untruthfulness, but it is the only way to portray such an alien experience to the non-combatant person. All the weaknesses that can be found in Sledge's memoirs reliability can be overshadowed by the strengths it presents as a historical source. Therefore, *With the Old Breed* is a reliable historical source.

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Restorative Justice as a Strong Approach in Mediating Conflicts

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Mediation is a tactic that has been used in conflict resolution for a long time. These conflicts can exist in countries, in communities, or even within oneself. The main idea is to know not only that these types of conflicts exist, but more importantly, that they are all related to one another. The process of understanding plays a key role in solving conflicts, as opposed to the many circumstances where compromise is made with a gun pressed to one's head or a treaty shoved down one's throat. The feeling of interconnectedness is important so we can acknowledge that although we all come from different backgrounds, different cultures, and different countries, we are all linked back to each other as human beings.

What is ironic about human beings is that they let their unique ability for critical thinking become a burden. We build walls with words, and let grudges, tragedy, and misunderstanding take hold of our judgment. Communication, used correctly, is to not take our weapons out right away for defense, but more so to break down those walls of insecurity that all of us possess, and learn from oneself and another.

Restorative Justice can be defined as "an ideology that focuses on reducing harm and making right the wrong". [1] Zehr is describing here that when genocide and war arises, there are ways to reflect on the roots of the issues concerning those tragedies and actively learn from those mistakes.

MEDIATION STRATEGIES

There are three types of mediation: government intervention (formulating and negotiating treaties), restorative justice (through conflict rebuilding workshops), and a combination of the two.[2] Each of these types of mediation provides the insight in solving conflict through respective ways.

Government intervention has been the primary tactic used in times of conflict. It is what prolonged the differences between the Hutu and Tutsi's in Rwanda; it's what caused us to go to war with Britain before the United States declared ourselves free in the Revolutionary War. Most don't associate the words "war" and "mediation," however they are extremely interlinked. More importantly, the treaties and peace agreements that lead up to these wars serve an interesting perspective on the process of solving conflicts. The idea behind government intervention is to provide a "quick fix" in the form of a law or agreement to satisfy an extremely complex situation. This type of mediation is mainly done at the international level, where there is more of a demand for solving conflicts quickly to prevent extreme circumstances (i.e. genocide, war).

Restorative justice is a mediation tactic that focuses largely on the themes of rebuilding, forgiving, understanding, and most importantly, trusting one another. A simple way to think about restorative justice is through breaking down relationships. The first is interpersonal: the relationship that one has with oneself the perceptions they make of themselves, and the experiences that influence those perceptions. Second, is intergroup: the relationships one has with their communities and families and more importantly, how personal actions of an individual can impact the community or family as a whole (for argument purposes, community is also classified at the familial level). Lastly, is relationship at the international level, a complex realization that every individual is connected to the world. Combined, one can clearly see that "institution-building, economic development, and political

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1 Zehr, Howard. The little book of restorative justice. Intercourse, PA: Good Books, 2002.
2 Reychler, Luc, and Thania Paffenholz. Peacebuilding: a field guide. Boulder: Lynne Rienner Publishers, 2001.

processes require that people work effectively together. To do so, they need to co-operate and trust each other in significant respects".[3]

A combination of government intervention and social workshops is a final approach of mediation. According the book, Peace Building: A Field Guide, the "aim is to intervene with the appropriate third party method at the appropriate time".[4] Therefore, the process can begin by providing social workshops, in hopes that the conflict will be sorted between the warring parties. If and when conflicts escalate, power mediation will come in. This motive increases the effectiveness and the chances of peace negotiations by using social work and power mediation to ensure that there will be an agreement.

EFFECTIVENESS OF STRATEGIES

An idea that falls under the category of government intervention is the outcome-oriented approach of "power mediation." As Thania Paffenholz, who is a lecturer in peace, development, and conflict studies and a researcher at the Centre for Conflict, Development and Peacebuilding at the Graduate Institute of International and Development Studies in Geneva, describes, "a precipice starts when a conflict situation changes suddenly…for example, be the death of a leader of one of the conflicting parties or natural disaster such as a drought." This concept relies heavily on ultimatum, a motivational threat as a means to cease conflict. In the summer of 1995, for example, the United States "linked financial support to reconstruct war-torn Bosnia to a peace agreement by the warring parties".[5] If no peace agreements were made between the warring parties, the United States would have simply bombed Bosnia's artillery. Although these methods provide an easy and quick solution to solving problems between warring parties, they fail to recognize the very personal and human part of negotiating. Ceasing the fighting in situations like Bosnia and their enemies can only be effective for so long before extremists are bound to override the law and let their days, months, or even years of aggression take hold of their reason. That is why it is argued that "they need real information, not speculation or the legally constraint information that comes from a trial or plea agreement".[6] This is where long-term relationship building and understanding could be a more rational and positive approach with not only restoring previous conflicts, but also preventing ones in the future.

It is known that "victim-offender mediation is the oldest and most widely practiced expression of restorative justice".[7] The HROC organization is a fine example for the powers of restorative justice.[8] HROC is centralized in the African Great Lakes region, which covers Burundi, the Democratic Republic of the Congo, Kenya, Rwanda, and Uganda. HROC's conflict resolution tactics begin with the philosophy "that in every person, there is something good".[9] More important is their understanding that perpetrator and victim experience trauma and its aftereffects. Their main method in approaching reconciliation is through standard workshops. These workshops run a course of three days, a strategy used by many society building organizations mainly because in order for "reconciliation to be lasting, some kind of trust must be built, and for that to happen, attitudes must change—hence the relevance for forgiveness".[10] These workshops are geared to centralize around the very core of human reasoning, covering

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3 Kohen, Ari, Michael Zanchelli, and Levi Drake. "Personal and Political Reconciliation in Post-Genocide Rwanda." Justice Research 24 (2011): 85-104.

4 Reychler and Paffenholz. Peacebuilding: a field guide.

5 Ibid.

6 Zehr. The little book of restorative justice.

7 Nugent, W. R.. "Participation In Victim-Offender Mediation And The Prevalence Of Subsequent Delinquent Behavior: A Meta-Analysis." Research on Social Work Practice 14, no. 6 (2004): 408-416.

8 HROC. "Helping to Create a More Peaceful Future in Africa." African Great Lakes Initiative. http://www.aglifpt.org/Program/hroc.htm.

9 Kohen, Zanchelli, and Drake. "Personal and Political Reconciliation in Post-Genocide Rwanda."

10 Ibid.

uncomfortable topics such as the reasons behind trauma and how it can affect the individual, the family, and the community dealing with anger, grief, loss, and mourning, and finally, the causes of trusting and mistrusting.[11] HROC's workshops in Africa consist of ten perpetrators, and ten victims. The structure of this workshop is essential because it allows the victims and the offender to not only meet on a face-to-face level, but to spend three days sorting out their differences, building trust through exercise, and sharing the different experiences and trauma that they had in result of the genocide. From the year 2006 to present day, the effectiveness of these workshops has resulted in "more than 200 cases…resolved through mediation".[12]

RESTORATIVE JUSTICE AS A STRONG APPROACH IN MEDIATING CONFLICT

The power of restorative justice remains an extremely controversial topic. Many prefer to use the quick and easy solution by implementing a forced resolution on a conflict. Although this may solve problems existing in the present moment, it may not be the best solution in preventing similar conflicts in the future. The reason for such aggression is because there were unresolved issues within the internal self of the warring parties. This is an indication of why lawbreakers "have been re-arrested after committing other crimes, many while trying to destroy evidence related to their alleged involvement in the genocide, Rwanda".[13] Because of their inability to connect with themselves and others around them, and more importantly to find peace and closure in their pasts, it has led to further crimes as a result of their traumatic experience.

Similar to the perpetrators in Rwanda, restorative justice is practiced in prisons, right here in the United States of America. This process, like HROC's workshops, aims to provide mediation practices between offenders and victims. Although it is noted "crime victims may be favorably or adversely affected by their experiences in the criminal justice system and with criminal justice authorities," the risk of the latter seems to be less likely than the productivity of the positive outcomes.[14] Those who "found that victims who participated in mediation were more often satisfied that justice had been rendered in their case than victims whose offenders received community service or another non-restorative alternative sanction".[15]

Assuming that everyone knows the feeling of getting into a dispute at one point in their lives, it is also widely known that the guilt of the situation carries with a person in all that they do unless it is reconciled. This is a subconscious and personal reaction, often leading one to mask this uncomfortable trait that they possess. The effectiveness of restorative justice can then only be accomplished if the parties are open for reconciliation. This process is both known to be "an awakening" or "a very uncomfortable situation to realize that these are real people".[16] Adding the human aspect of mediation is also very important. In many cases, the perpetrators and victims in large-scale conflicts never get to meet face to face, thus there is a lack of awareness that there are real human beings involved in the conflict (both the offender and the victim). In order for them to meet, it is essential that they accept the self that they had projected onto others as a way of blaming others for what they perceive as failures in their own lives.[17] This is a difficult awareness, being that the real enemy is most often ourselves, and that the enemy from within us often projects "roles or masks that do not reflect our authentic feelings so we can

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[11] HROC. "Helping to Create a More Peaceful Future in Africa."

[12] Ibid.

[13] Kohen, Zanchelli, and Drake. "Personal and Political Reconciliation in Post-Genocide Rwanda."

[14] Wemmers, Jo-Anne, and Katie Cyr. "Can Mediation Be Therapeutic For Crime Victims? An Evaluation Of Victims' Experiences In Mediation With Young Offenders." Canadian Journal of Criminology and Criminal Justice/La Revue canadienne de criminologie et de justice pénale 47, no. 3 (2005): 527-544.

[15] Ibid.

[16] Abrams, Laura, Mark Umbreit, and Anne Gordon. "Young Offenders Speak About Meeting Their Victims: Implications for Future Programs." Contemporary Justice Review 9.3 (2006): 243-256.

[17] Cloke, Ken. Mediating dangerously the frontiers of conflict resolution. San Francisco: Jossey-Bass, 2001.

divert attention from our mistakes".[18]

Although mediation is proven to work in some cases, it should also be considered that like anything, it is very circumstantial. Kohen puts it simply,

> *Human nature is not fixed or eternal, but changes with culture and conditions. No two parties are alike, no two mediators are alike, and no one is the same from one moment to the next. What succeeds for one mediator with one party at one moment may fail for another mediator with a different party or a different moment. What is needed is no prescription, nut skill, intuition, flexibility, and the ability to be dangerously honest and apathetic.[19]*

However, it is also important to note that given the correct circumstances and the correct attitude towards those circumstances, there is an unbelievable result of conflicts being resolved not only within that one moment, but for the future as well. The actions of an individual can impact not only their family and their community, but on a national and global scale as well, which proves the idea of interconnectedness. In all conflicts, the opposing parties have nothing in common, however it is remarkable how often they fit together like parts of a system.[20] One simply could not recover internally without the other, just as one could not find closure (consciously or not) without the acknowledgment or awareness of the others' existence. Restorative justice, although covering various topics such as reconciling with extreme traumatic events like the genocide in Rwanda, or a simple theoretical situation of arguments between family members, allows us to believe in one very important thing: "People escalate their conflicts by not being authentic. As they accept themselves more fully, they become more accepting of others".[21]

Restorative justice is one way to provide non-violent solutions to sometimes extremely violent circumstances. They are chances to not only identify the conflicts in the present, but by also preventing them in the future. Although quick fixes such as negotiating peace agreements, or providing an ultimatum in order to reach agreements do have immediate effects, these effects tend to only worsen the aggravation and have a better chance of fueling similar conflicts in the future. Through finding forgiveness in oneself, it allows one to forgive others as well, thus breaking the cycle of violence by projecting true personalities.

Restorative justice however, can provide mediation on three different levels, instead of concentrating solely on the surface level of conflicts. It allows the chance to understand not only the actions one does to another, but also how these actions affect not only themselves, as well as their community. This awareness is a more positive approach regardless of whether it is successful or not. Because restorative justice relies heavily on the cooperation of the facilitators, the offenders, and the victims, the outcomes are undetermined. Many who have participated in a form of mediation have expressed the gratifying feeling it was to finally understand the "why" of their case. As philosopher Martin Buber states, "I can only become I through my relationship with you, so truth is never just mine or yours, but ours".[22] By using restorative justice as a positive approach towards mediation, it will be possible to begin to realize the truths that bind every human being in this world.

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[18] Cloke. Mediating dangerously the frontier of conflict resolution.

[19] Kohen, Zanchelli, and Drake. "Personal and Political Reconciliation in Post-Genocide Rwanda."

[20] Ibid.

[21] Cloke. Mediating dangerously the frontier of conflict resolution.

[22] Kohen, Zanchelli, and Drake. "Personal and Political Reconciliation in Post-Genocide Rwanda."

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Platonic and Attic Laws on Slavery

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Plato called them ἀνδπάποδα (human-footed stock) and Aristotle said they were δουλοπρεπής ἀπὸ τη φύση (servile by nature), but most slaves (δουλεία) were once free men and women that quickly found themselves servants in a Greek democracy. Those that served as slaves were often repaying a debt, on the losing side of a war, or considered a slave by birth. In antiquity Athens was a city focused on knowledge and philosophy, yet they found slavery to be an acceptable institution defended by the philosophers themselves. Those that challenged slavery argued more for the unnatural aspects of the master/slave dynamic rather than opposing the institution outright. The question we should ask ourselves is how and why did the ancient Greeks defend the institution of slavery? The Platonic and Attic laws on slavery, Aristotle's notion of the nature of slavery, and the reasons why slavery may have been a rational part of life for ancient Greece are ideas that should be considered.

No one is certain when slavery started in the city-state of Greece, but in his book Ideas of Slavery from Aristotle to Augustine, Peter Garnsey makes the claim that chattel slavery began on the island of Chios during the sixth century BC. This initial use of slaves gave rise to slavery as an institution, spreading throughout the empire and affecting everything from Grecian industry to its economy. Whether slavery existed as an extension of Greek civilization from the beginning of the empire or whether it gradually grew into an acceptable practice over the course of time means little when you consider the laws that were established for both slaves and masters.

Laws referring to slavery were highlighted in both the Platonic Laws and the Attic Laws. Both sets of regulations were specific in stating that slaves were considered property of the owner and thus treated as an extension of the household. In his article Plato and Greek Slavery, Glenn R. Morrow emphasizes some of the important aspects of Attic law as compared to Platonic law. He shows that slaves had no rights of their own, and they could not seek justice in a court nor could they protect themselves if attacked. Some protection was offered to the slaves through moral and religious law, but the judicial rights of protection were left to the master claiming ownership of the slave.

Morrow continues by distinguishing several important differences between the two sets of laws. The first difference was the punishment of a slave for a crime. Under Athenian law the slave would receive strips equivalent to the fine a freeman would have to pay. Secondly, in the Platonic law a child would be considered a slave when born to one free and one slave parent, but according to the Attic law a child born with one free and one slave parent would often acquire the status of citizen and therefore be considered free. Finally, both laws had different approaches when dealing with the freemen. Men who were emancipated were still held accountable for fulfilling certain obligations to their former masters. Plato allows for no concession here: according to his law, if a slave rejects his obligations, his previous master can reclaim ownership. The Attic law allows a negligent slave to enter into a suit with the former master. If the slave wins he remains free, but should he lose, his emancipation would be void. By referencing the Platonic laws and comparing them to Athenian law we can get a full grasp of the support that Plato offered the institution of slavery. Plato insisted that slaves be kept from leisurely activities and he discouraged the formation of relationships between slaves and their masters. This leads one to believe that he considered slaves to be unworthy of recognition and therefore worthy of only one position in life, that of a servant. His laws seem to set forth justification for the rash treatment of slaves by their masters, whereas men like Aristotle chose to follow a different path in defending slavery.

Aristotle's theory of natural slavery is highlighted in his works, Politics. The great philosopher makes a bold, if not flawed, attempt to justify slavery through a concept not unlike natural selection where one species is found to

be superior to another. He highlights the natural separation of men and differentiates them as Greek (Ἑλληνικός) and non-Greek (Βάρβαροι), those capable of reasoning and those incapable of reasoning. According to Malcolm Heath, in his article Aristotle on Natural Slavery, Aristotle suggested that, "slaves can be responsive to the reasoned instructions of a master, they have no capacity for reasoning autonomously." Heath continues with the correlation between non-Greeks (Βάρβαροι) and those that lack rationality (ἀλόγιστοι) by referring to Aristotle's association of them with non-human animals.

According to Paul Millett's article Aristotle and Slavery in Athens, Aristotle's rationalization of natural slavery begins with a definition of slavery which states, "…head of households need to acquire the necessities of life, which include tools, both lifeless and living." Aristotle emphasizes the importance of slavery by stating in Politics that, "…parts of household management correspond to the persons who compose the household, and a complete household consists of slaves and freemen." He continues by saying that "…a possession is an instrument for maintaining life. And so, in the arrangement of the family, a slave is a living possession, and property a number of such instruments; and the servant is himself an instrument which takes precedence of all other instruments."

By definition Aristotle seems to be proclaiming that slaves are necessary tools of the household and thus a justifiable asset to both the master and the master's estate. As a tool the slave would be used in accordance with the masters' needs. This meant the slave would be wielded as an instrument of labor to complete work the master would otherwise have done himself. Aristotle viewed the institution of slavery as a natural part of humanity, but this may have been based on the demand for slave labor in ancient Greece.

Greek society grew dependent upon the slave population. Slaves were used to complete domestic, agricultural, and industrial work that Grecians were not inspired to perform. As a result, an economic system developed around slavery and included the sale and purchase of slaves who were captured by war or by piracy. Slavery became so widespread in the city-state that it was not uncommon for the poorer households to own at least one slave. Millett states that those unable to afford a slave were deemed unworthy of holding the position of head of household in Greek society. Grecians fell under the assumption that a well-functioning society had a necessity for slavery. Steven W. Hirsch, in his review of Yvon Garlan's book Slavery in Ancient Greece, highlights Grecian slave dependency when he writes that chattel slavery was a "necessary element for [Greek society] to affirm its identity." The city revolved around its use of slave labor and thus slavery as an institution was justifiable in the eyes of the city-state.

In Ancient Slavery and Modern Ideology Moses I. Finley attributes the growing standard of life, luxuries, and leisure to the formation of slavery. Grecians are known for a number of attributes including the arts, democracy, science, and luxury, but slavery is typically bypassed as a topic of discussion. Finley points out that, "it was slavery that first made possible the division of labour between agriculture and industry on a considerable scale… Without slavery, no Greek state, no Greek art and science." It remains to be seen whether or not the entire contribution of the Greek city-state was reliant upon slave labor, but one would be ignorant not to consider the implications here.

The leisure time allotted to Greek citizens was done so with the use of servants. Had it not been for the institutionalization of slavery in ancient Greece the empire may have festered instead of grown in its wisdom. Slaves were often the caretakers of the household and the marketplace. They would manage a place of business while the master or owner was free to pursue other interests, allowing for the creation of art and the advancement of knowledge. Slaves were also the major contributors to industry by working in silver mines which were a source of luxury and finance for the Grecians. Finley claims that the elite managed to block "…the healthy development of an urban middle class of traders and craftsmen, and they thus set the future course of the

Greek city-state, economically, politically, and ideologically." The economic, political, and artistic advancements made in Grecian society were done by using slaves as managers and as workers. Slavery became an intricate part of society in Greece, but there were those that stood in opposition to the philosophy of Plato and Aristotle.

Gustave Glotz, in his book Ancient Greece at Work, tells us that Athens made no attempts to end slavery as an institution and that Cynics were the largest proponents for the abolition of slavery. One such Cynic, Alcidamas, made the statement that, "God created us all free; nature makes no slaves." When we look deeper into Aristotle's theory on natural slavery we may get the feeling that he did not support slavery as much as he tried to rationalize its existence. In Aristotle on Nature and Politics: The Case of Slavery, Wayne Ambler argues this point by referring to chapter 5 of Politics which asks, "Is there any one thus intended by nature to be a slave, and for whom such a condition is expedient and right, or rather is not all slavery a violation of nature?." Ambler emphasizes that Aristotle is questioning the very existence of slaves, thus saying slaves that do not exist cannot be servile by nature.

In truth we find that not only did slavery exist in ancient Greece, but it was also a thriving business. The city-state's necessity for slavery may have been compounded with its people's desire for leisure and luxury and therefore was condoned by great philosophers. It is hard to believe that a democratic society could hold others against their will and force them to perform laborious tasks, but slavery as an institution held sway politically and economically in Athens. Plato criticized those masters who were lenient on their slaves and he stressed the need for masters to rule with a firm hand. Aristotle made attempts to justify slavery and legitimize the need to hold men and women as servants in a society that placed freedom above all else. Ultimately, what we find is that Grecians seem to have adopted slavery to suit their personal needs for meaningful lives: ones that lead to breakthroughs in art, science, politics, and philosophy. It is through this need that slavery was found as justifiable.

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Education in China: Comparing a Country's Curricula to its Culture

By Ashley Walter
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Before embarking on my adventure to the other side of the world with my Arcadian classmates, I had already accumulated a curiosity for the education system in China and how it might interact with the culture of that country. Befriending students from Xi'an University, touring their campus, attending a lecture in the library's American Culture Center, talking with faculty members of the nearby Training School, and doing some follow-up readings after I returned to the U.S. has given me the chance to evaluate this dynamic. My experiences in China and my supplementary research have helped illuminate the relationship between the values taught in school and the values held in a culture. The curriculum and subject emphasis in schools, combined with its testing standards and classroom experience, define a student's experience. The Chinese cultural presence on teaching and learning is also noteworthy. Lastly, international influence is a two-way street, where Western models are adapted by schools in China and the U.S.A. is under pressure to compete with the test scores of the Chinese.

The education system in China is partially characterized by what it emphasizes in its curriculum. In the most traditional instances, schools demand students to retain the details of the dynasties in China's vast history. In secondary school, many children do not take art or music classes unless they intended on majoring in those subjects in college; these individuals were referred to as "special students" who often scored lower than average on the big university entrance exam, the Gaokao. The four main subjects taught in Chinese high schools are English, Mathematics, Chinese, and Humanities or Science. The students were expected to learn by memorizing lots of factual information, and if pupils misbehaved, they were physically punished.

Additionally, students are often taught only what they will see on the Gaokao, so studying is focused and limited to the material that will appear on the exam. Such great emphasis is placed on the Gaokao because it determines if a high school student can continue their education through admittance to a university.   The exam has historical roots, and students are judged according to their score. New-trend teachers criticize that students should also be assessed by their means of applying their skills, not just the results of an exam.

In the classroom, students attentively listened to their teachers and rarely asked questions, which differs from the learning environment in the U.S. This arrangement – Chinese students silently and diligently absorbing the instructions of the teacher – enforces stability rather than promoting generativity. Class size was usually large, and each high school student was required to wear a gender-neutral bulky uniform; the philosophy behind this androgynous attire was to discourage students from becoming attracted to someone else because a relationship would be a distraction from studies. Overall, the curriculum, emphasis on the Gaokao, and classroom environment characterize education in China.

The Chinese education system also reflects the cultural values that the country holds. A collectivist culture like China promotes conformity and the protection of the status quo. The classroom dynamics in China reflect an emphasis on social harmony, where children will be educated in a way that will inspire them to be involved citizens in adulthood. The traditional classroom scene involves an authoritarian instructor and students who are silent, behaved, diligent listeners; the lack of question-asking affirms that the education system promotes stability and conformity above innovation and change.

Furthermore, the Chinese believe that with enough dedication, academic excellence is a possibility for all. Where Americans usually think of intelligence as an innate characteristic, the Chinese emphasize effort. Building off the

notion of hard work, students of Chinese families feel a moral obligation to succeed. In line with Confucian philosophy of loyalty and obedience, students exert themselves out of a sense of duty. As a result, they study for long hours and often forgo the leisure activities and extracurricular commitments of American schoolchildren.

In addition, parents play a key role in their children's educational performance and continuation. First of all, Asian parents are more likely to devote more hours helping their children with homework than American parents. Second, Chinese parents must support their children as they attend high school and college; if parents are unable to pay the tuition, they are put to shame. While many American high school students and collegians take out loans and get jobs to support themselves independently, Chinese students rely heavily on their parents as they focus primarily on their studies.

The interconnectedness between education and culture is circular and complex, since it is difficult to identify the forces of causation and the actual consequences. A culture may influence which values and standards are set within an education system, and then the children – once they have grown up into active citizens in their communities – will set the cultural norms and expectations for how they desire their children to be educated. People are shaped by culture just as culture is shaped by people. This relationship has an important role in education, the institution where individuals are instilled with knowledge and values early in their lives.

The experiences of Chinese schoolchildren and the connection between education and culture are comparable to the norms of the United States. International influence is mutual, so while differences in culture exist, the cultural dynamics of China and the U.S. are intertwined.

The contemporary Chinese education system is actually borrowed from the United States. Indicators of this influence were present in a courtyard on the Xi'an University campus, where six bronze busts, serving as sentinels lining both sides of a walkway, honored the contribution of Eastern and Western thinkers. On one side stood the busts of Buddha, Confucius, and Cai Yuanpei (an educational leader), and they were all facing the opposing row which consisted of Plato, Aristotle, and Wilhelm von Humboldt (a Prussian philosopher). The sculptures symbolized how cultures draw from other cultures and how they can come together in the institution of education. Additionally, schools in China are attempting to integrate Western practicality with a Chinese foundation. While seeking to maintain their national identity by having Chinese-centered education, teachers are also adopting the methods of Western nations. The teaching of English is widespread, since it is not only one of the four main classes in high school, but also a popular college major studied by university students who are so eager to practice their skills.

In addition to evidence of a culturally combined curriculum, the approaches of Chinese teachers and professors are also changing. The style of instruction is becoming less traditional for new-trend faculty members. Some professors such as Rachel, who lectured in the American Cultural Center of Xi'an University, allow students to refer to them in friendly informality (e.g., "Sister Rachel") rather than with a proper title. Young teachers are also less likely to use corporeal punishment as a method of discipline. Rather than just expecting students to silently absorb lessons, teachers are now probing for feedback on what they could do to make class more interesting while encouraging student participation. These teachers show distaste for the historical Gaokao examination, where so much of student assessment lies on a mere score. These liberal shifts away from traditional Chinese educational practices are redolent of modern Western methods, and they will undoubtedly impact the overall culture as schoolchildren carry their experiences with them into adulthood.

While the United States and other Western nations model a new way to run a classroom, China and its neighboring countries are also putting pressure on the American school system. The results of international test scores have

shown a considerable performance gap, where American schoolchildren are lagging behind most Asian nations. In an Average Math Achievement Score study in which 15-year-olds were tested, students of Hong Kong averaged a score of 547 and students of Macao averaged a score of 525. These Chinese children performed higher than American 15-year-olds, who averaged a score of 474. This study was conducted in 2006 through the Program for International Student Assessment; the 166 American schools that participated included both public and private institutions, totaling 5,611 15-year-olds that were tested in the U.S. The outcomes of such comparisons strengthen the call for school reform in the United States. The results also spur an evaluation of the academic discipline – or lack thereof – shown by American schoolchildren in comparison to their diligent Chinese age-mates, and what that might mean for the future of each nation.

Journeying to the other side of the world has fed fascination for cultural differences and interconnectedness. In the domain of education, China has a curriculum that reflects its societal values. The areas of study, emphasis on high exam performance, and rigid classroom dynamics characterize the experiences of Chinese school children. The collectivist ideal of promoting social harmony, the cultural expectation of persistence, and the parental support students receive is evident in the nature of China's schooling. International influence is also present, such as the American education system model and more liberalized new-trend teachers. The United States is also assessing the student performance of American children to compare to China's superior test scores. Overall, the connection between curriculum and culture, set on an international stage, is a complex dynamic. How school children experience the lessons and receive their country's values can dictate the course of the future, not just for their homeland, but for the world.

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Note Taking Effectiveness in the Modern Classroom

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The technological revolution has forever changed the way that people in many different environments work and learn. The modern classroom is no exception; it is rapidly changing due to the influx of technology such as laptops, tablets, smart boards, etc. This study will examine the effect that such technology has had on the modern day learning environment. Specifically, what effect does typing lecture notes on a laptop instead of writing them by hand have on test scores? Previous literature on this topic varies greatly, and covers a number of different facets of note-taking behavior. Early work in memory identifies three distinct processes involved in the memory process. These are Encoding, Storage, and Retrieval. Since retrieval, within the context of the learning environment, is the process of actually remembering the material during a test, most studies involving note-taking behavior, including the current study, focus on the encoding or external storage aspects of memory.

Encoding is the process of translating and organizing information and storing it for future use. The encoding process as it pertains to note taking has been researched extensively over the years. Fisher and Harris found that students who took their own notes and reviewed them performed better than students who did not take notes but instead studied the notes provided by the lecturer.[1] Einstein, Morris, & Smith found that students who took notes during a lecture, recalled more high-importance information than students who only listened to the lecture.[2]

The external storage function of note taking has also been well documented. For example Fisher and Harris found that students who studied their notes between the immediate test and the follow up test three weeks later, performed better on the follow up test than the students who did not study their notes. [3] Likewise, Einstein Morris, and Smith found that both more successful and less successful note takers benefitted from reviewing their notes.[4] Finally, Fisher and Harris found that students who took their own notes and reviewed them, performed better than students who merely reviewed the lecturer's notes, or took notes themselves but did not review them. [5] This suggests that the combination of taking your own notes and reviewing them takes full advantage of the encoding, and the external storage functions of note taking.

The influx of technology in the classroom is a more recent phenomenon, and thus studies examining the effects are a bit scarce and not as well distributed yet. There is, however, some evidence that the use of computers can be beneficial in the classroom. For example, Rogers & Case-Smith found that 6th graders with poor handwriting and note taking skills took notes in a more organized fashion on computers than they did by hand.[6] They also found that 75% of their subjects saw an increase in the speed by which they took notes while using a computer. This finding on the speed of note taking, links to the findings of Peverly et al. that transcription fluency (how fast

[1] Fisher, J. L., & Harris, M. B. (1973). Effect of note taking and review on recall. Journal of Educational Psychology, 65(3), 321-325. doi: 10.1037/h0035640

[2] Einstein, G. O., Morris, J., & Smith, S. (1985). Note-taking, individual differences, and memory for lecture information. Journal of Educational Psychology,77(5), 522-532. doi: 10.1037/0022-0663.77.5.522

[3] Fisher & Harris. Effect of note taking and review on recall.

[4] Einstein, Morris, & Smith. Note-taking, individual differences, and memory for lecture information.

[5] Fisher & Harris. Effect of note taking and review on recall.

[6] Rogers, J., & Case-Smith, J. (2002). Relationship between handwriting and keyboarding performance of sixth-grade students. American Journal of Occupational Therapy, 56, 34–39. doi:10.5014/ajot.56.1.34

one can take notes) is the greatest predictor of the quality of lecture notes.[7] In other words, the faster students can transcribe lecture notes, the better their notes will be, and this will have a positive effect on their test scores. Bui, Myerson, & Hale found that students who took notes on a computer, took more notes, and performed better on immediate free recall and short answer tests.[8]

The current study seeks to extend the findings of Bui, Myerson, & Hale.[9] The researchers want to replicate their short-term findings, but also to extend the study to include a delayed follow-up test for subjects taking handwritten notes. We hypothesize that computer note takers will perform better on the immediate test, and also that they will retain the information better and thus perform better on a delayed test one week later.

METHOD

PARTICIPANTS

Twenty-one subjects were recruited from three psychology classes. One class was from Rutgers at Atlantic Cape and two classes were from Atlantic Cape Community College (ACCC). The subjects from ACCC were members of Professor Beth Sanders-Rabinowitz's Child Psychology, and Social Psychology classes. Professor Sanders-Rabinowitz compensated her students with extra credit for their participation in the study.

The subjects from Rutgers at Atlantic Cape were members of Professor Kenneth Allendoerfer's Experimental Psychology class, and classmates of the research team. As compensation for their participation, the research team participated as subjects in the studies that the subjects themselves are conducting for the class. Of the participants from both schools 5 were male, 16 were female with their ages varying from eighteen to forty-nine and a mean age of twenty-five.

The data from two subjects were excluded due to the fact that the subjects failed to take notes during the video lecture. The data from a third subject was excluded because the subject failed to complete the entire quiz. This resulted in the data being more than two standard deviations from the mean.

MATERIALS

A questionnaire was used during recruiting to acquire basic demographic information (see Appendix 1). An informed consent form was used to inform the subjects of the general purposes of the study, what was expected of them should they choose to participate, and to make them aware of the confidentiality, and anonymity measures in place to protect their privacy (see Appendix 2). Since there are two different types of compensation, a separate informed consent sheet was given to the subjects from Rutgers at Atlantic Cape (see Appendix 3). A nine-minute video was then shown to the subjects in a classroom via a projector screen. The video was a lecture by the Khan Academy featuring Drs. Steven Zucker & Beth Harris giving a lecture on an ancient artifact called the Standard of Ur.[10]

Lastly, a quiz was used to assess how much of the information presented in the video was retained by the subjects (see Appendix 4). The same quiz was randomly reorganized and used for the follow up test one week later (see Appendix 5). The order in which each subject received the two quizzes was randomized to control for order

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7 Peverly, S. T., Ramaswamy, V., Brown, C., Sumowsky, J., Alidoost, M., & Garner, J. (2007). What predicts skill in lecture note taking? Journal of Educational Psychology, 99, 167–180. doi:10.1037/0022-0663.99.1.167

8 Bui, D. C., Myerson, J., & Hale, S. (2012, October 8). Note-Taking With Computers: Exploring Alternative Strategies for Improved Recall. Journal of Educational Psychology. Advance online publication. doi: 10.1037/a0030367

9 Ibid.

10 Zucker, S. (Performer), Harris, B. (Performer). (2012). Sumerian art: Standard of ur. [Web Video]. Retrieved from http://www.khanacademy.org/humanities/history/ancient-medieval/v/standard-of-ur–c–2600-2400-b-c-e.

effects. A laptop computer or college ruled notepaper was provided for the subjects to take their notes dependent on which condition they were randomly assigned to. The experiment took place in two separate class-rooms provided by Rutgers at Atlantic Cape. They each had the same projector and screen. The subjects sat at the tables that the students normally sit at during regular class hours, to replicate an average classroom setting.

PROCEDURES

When initially recruiting the subjects, the researchers distributed a questionnaire (see Appendix 1) to acquire demographic and basic information such as age, gender, computer competence, college grade point average, and the number of college credits completed. This information was used to ensure that there was no unintentional assignment bias to confound the results. After answering the questionnaire, the subjects were given a date, time, and place to report for the study. The information from the questionnaires was used to determine the demographics of the two groups.

The subjects were then randomly assigned to the computer or the handwritten conditions, and each subject's quiz order was randomized. The subjects were split into two separate rooms during the experiment to maintain experimental control. The computer group was instructed to take notes on the laptop computer provided for them, using a simple word processing program while the handwritten group took notes using a pen and paper provided for them. Both groups watched the nine-minute video on the projector screen and took notes using their assigned method. Subjects then took a 20-question immediate quiz on the content of the video. The subjects were thanked for their participation, and reminded of the follow-up appointment in one week's time. This entire process took approximately 30 minutes.

One week later, the subjects were administered their second quiz on the material presented in the video lecture. Once they finished the quiz, they were debriefed on the study, given the opportunity to ask questions, thanked for their participation, and dismissed.

RESULTS

The immediate test scores were analyzed using an independent sample, two-tailed t-test with a .05 level of significance. The mean test score for the computer group was 15.1 (SD = 1.83) whereas the handwritten group scored an average of 15.4 on the test (SD = 2.37) as seen in Figure 1. The analysis of the data showed that there was no statistically significant difference between the test scores of students who take notes on a computer, and students who take notes by hand, $t(16.67) = -0.299$, $p = 0.769$. In other words, there was no statistically significant difference in the immediate test scores of students taking notes on a computer or students taking notes by hand.

The delayed test scores were also analyzed using an independent sample, two-tailed t-test with a .05 level of significance. The mean test score for the computer group was 14 (SD = 2.62) and the handwritten group scored an average of 14.33 on the test (SD = 2.6) as seen in Figure 1. The analysis of the data showed that there was no statistically significant difference between the test scores of students who take notes on a computer, and students who take notes by hand, $t(14.74) = -2.63$, $p = .796$. In other words, there was no statistically significant difference in the delayed test scores of students taking notes on a computer or students taking notes by hand.

Lastly, the word counts of the lecture notes taken by both groups were analyzed, using an independent sample, two-tailed t-test with a .05 level of significance. The mean word count for the computer group was 153.3 (SD = 62.6) while the average of the handwritten group was 96.7 (SD = 45.1) as seen in Figure 2. The analysis of the data showed that there was a statistically significant difference between the amount of notes taken by students taking notes on a computer, and students taking notes by hand, $t(17) = 2.24$, $p = .041$. In other words, students

taking notes on a computer took significantly more notes than students taking notes by hand.

DISCUSSION

Our data did not support our hypotheses in that the computer group did not perform better on the immediate or the delayed test. The current data are contrary previous research by Bui, Myerson, & Hale who found that computer note takers performed better than handwritten note takers.[11] Not only did both groups perform equally well on the immediate and delayed tests, but the test scores of both groups decayed at the same rate from the immediate to the delayed tests. These results suggest that the encoding functions of both digital and handwritten note taking have comparable effects on short-term and long-term memory.

The current study isolated the encoding function of memory by not allowing the subjects to review their notes. This allowed the researchers to examine the differences in the effectiveness of encoding between the two groups. The data show that the encoding function of taking notes on either a laptop or by hand does not, in and of itself, produce significant changes in test scores. This may not be true if the subjects were allowed to utilize the external storage function of the notes.

A possible limitation of the current study was the small subject pool. One reason for this could be that subjects had to travel to our campus to participate in the study. Another limitation is that all our subjects were college students; in future research we would like to see groups that are representative of the larger population. Future research could also look at middle and high school populations to see if the effect is the same.

A good direction for future research would be to allow the subjects to review their notes; this may produce a significant effect between the digital and handwritten groups. Future research could examine the effect of tests that vary in difficulty. It is possible that a more difficult test could increase the drop-off in test scores between the immediate and the delayed test. Furthermore, the current study only examined laptops versus handwriting for notes.

As technology advances, other forms of digital note taking will become more prevalent. Future research may want to examine the effect of tablet note taking, dictated notes, voice recognition software, and other forms of digital note taking on test scores. Research in this field is important because technology is becoming more and more prevalent in today's classrooms. Thus, research on the effect that technology has on the learning process can help shape the way that students learn in the modern classroom. If future studies can provide evidence on how to better make use of technology in the classroom, students can harness the educational benefits that can be achieved through its use.

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Appendix 1

Basic Information

Subject Number_____

Name:_____

Gender: A.) Male   B.) Female

How old are you? _____

How many College credits have you completed? _____

How do you usually take notes during class?
   A.) Handwritten   b.) Typed/Electronic   c.) Both

How confident are you in your ability to use a computer?

Low confidence   1 — 2 — 3 — 4 — 5   High confidence

What is your cumulative GPA? _____

INFORMED CONSENT

Subject Number _____

Subjects will watch a nine-minute video and take notes on the content that is presented. There will then be a short quiz to measure how much information from the video was retained. This whole process should take roughly 30 minutes. One week later, subjects will be asked to come back for a brief follow up study that will take about fifteen minutes. All data will be kept confidential and the data will be kept separate from the participant's personal information. In order to protect subject anonymity all personal information will be destroyed after the study is completed. Subjects participate at their own discretion and may drop out of the study at any point, without penalty. For any concerns or to report an issue with your experience participating in the study, please contact professor Kenneth Allendoerfer via e-mail at kenneth.allendoerfer@rutgers.edu.

We foresee no possible risks of participation. Possible benefits of participation: you may find it interesting, and you can contribute to science. Compensation for participating: for your participation in the study, Professor Sanders has agreed a reward of extra credit. Subjects will receive partial credit for partial participation, and full credit for full participation.

Name: _____ Date: _____

Signature: _____

Witness: _____

INFORMED CONSENT 2

Subject Number_____

Subjects will watch a nine-minute video and take notes on the content that is presented. There will then be a short quiz to measure how much information from the video was retained. This whole process should take roughly 30 minutes. One week later, subjects will be asked to come back for a brief follow up study that will take about fifteen minutes. All data will be kept confidential and the data will be kept separate from the participant's personal information. In order to protect subject anonymity all personal information will be destroyed after the study is completed. Subjects participate at their own discretion and may drop out of the study at any point, without penalty. For any concerns or to report an issue with your experience participating in the study, please contact professor Kenneth Allendoerfer via e-mail at kenneth.allendoerfer@rutgers.edu.

We foresee no possible risks of participation. Possible benefits of participation: you may find it interesting, and you can contribute to science. Compensation for participating: For your participation in the study, the researchers will volunteer to be subjects in your Experimental Psychology final experimental study.

Name: _____   Date:_____

Signature:_____

Witness: _____

QUIZ 1

1. The top registers of the standard of Ur feature:
    a. A King being brought prisoners of war
    b. Merchants leading animals to market
    c. A King seated among his court
    d. Both a and c

2. Only four people were killed in the battle depicted on the Standard of Ur.
    a. True
    b. False

3. The figures on the Standard of Ur are depicted in three dimensions rather than in two-dimensional profile.
    a. True
    b. False

4. The two sides of the Standard focus on the themes of:
    a. Rich, and poor
    b. Male, and Female
    c. War, and Peace
    d. All of the Above

5. How many registers are on each side of the Standard of Ur?
    a. 1
    b. 2
    c. 3
    d. 4

6. The style used on the Standard of Ur is similar to the style of:
    a. Babylon
    b. Assyria
    c. Egypt
    d. Rome

7. The soldier's helmets depicted on the Standard of Ur have never been proven to have actually existed.
    a. True
    b. False

8. How old is the Standard of Ur?
    a. 3500 years
    b. 2500 years
    c. 4500 years
    d. 1500 years

9. The bottom register is composed of the lowest class workers in the society.
    a. True
    b. False

10. One of the reasons the Standard of Ur was made from so many different materials is because Ur was a society made up solely of farmers.
   a. True
   b. False

11. The king is distinguished from the rest of the figures because:
   a. He is dressed better than everyone else
   b. He has more jewelry
   c. He has lots of concubines
   d. He is much larger than the rest of the people.

12. The standard of Ur was discovered in the 1800's.
   a. True
   b. False

13. The society depicted in the Standard of Ur has nothing in common with today's society.
   a. True
   b. False

14. What are the two things the eagle on the back of a US dollar bill clutches in its talons?
   a. Arrows, and a fig branch
   b. Arrows, and a Scroll
   c. Olive branch, and a Scroll
   d. Olive branch, and Arrows

15. The city-state of Ur is located in what modern day country?
   a. Iran
   b. Iraq
   c. Turkey
   d. Pakistan

16. The figures on the Standard of Ur depict:
   a. People, and Animals
   b. People, and Gods
   c. Animals, and Gods
   d. All of the above

17. Some have proposed that the Standard of Ur was a box for a musical instrument.
   a. True
   b. False

18. The way experts determined that the king was being brought prisoners is because the prisoners are depicted smaller than anyone else.
   a. True
   b. False

19. The middle register on the second side of the Standard of Ur depicts:
    a. Chariots riding over enemies.
    b. A king seated among his court.
    c. Farmers and manual laborers.
    d. Ranks of soldiers marching toward a battle.

20. The Standard of Ur was discovered by Leonard Woolley.
    a. True
    b. False

QUIZ 2

1. How old is the Standard of Ur?
    a. 3500 years
    b. 2500 years
    c. 4500 years
    d. 1500 years

2. One of the reasons the Standard of Ur was made from so many different materials is because Ur was a society made up solely of farmers.
    a. True
    b. False

3. The figures on the Standard of Ur depict:
    a. People, and Animals
    b. People, and Gods
    c. Animals, and Gods
    d. All of the above

4. The style used on the Standard of Ur is similar to the style of:
    a. Babylon
    b. Assyria
    c. Egypt
    d. Rome

5. The way experts determined that the king was being brought prisoners is because the prisoners are depicted smaller than anyone else.
    a. True
    b. False

6. How many registers are on each side of the Standard of Ur?
    a. 1
    b. 2
    c. 3
    d. 4

7. The bottom register is composed of the lowest class workers in the society.
    a. True
    b. False

8. The top registers of the standard of Ur feature:
    a. A King being brought prisoners of war
    b. Merchants leading animals to market
    c. A King seated among his court
    d. Both a and c

9. The Standard of Ur was discovered by Leonard Woolley.
    a. True
    b. False

10. What are the two things the eagle on the back of a US dollar bill clutches in its talons?
    a. Arrows, and a fig branch
    b. Arrows, and a Scroll
    c. Olive branch, and a Scroll
    d. Olive branch, and Arrows

11. The figures on the Standard of Ur are depicted in three dimensions rather than in two-dimensional profile.
    a. True
    b. False

12. The standard of Ur was discovered in the 1800's.
    a. True
    b. False

13. The middle register on the second side of the Standard of Ur depicts:
    a. Chariots riding over enemies.
    b. A king seated among his court.
    c. Farmers and manual laborers.
    d. Ranks of soldiers marching toward a battle.

14. The society depicted in the Standard of Ur has nothing in common with today's society.
    a. True
    b. False

15. Only four people were killed in the battle depicted on the Standard of Ur.
    a. True
    b. False

16. The city-state of Ur is located in what modern day country?
    a. Iran
    b. Iraq
    c. Turkey
    d. Pakistan

17. The soldier's helmets depicted on the Standard of Ur have never been proven to have actually existed.
    a. True
    b. False

18. The king is distinguished from the rest of the figures because:
    a. He is dressed better than everyone else
    b. He has more jewelry
    c. He has lots of concubines
    d. He is much larger than the rest of the people.

19. Some have proposed that the Standard of Ur was a box for a musical instrument.
    a. True
    b. False

20. The two sides of the Standard focus on the themes of:
    a. Rich, and poor
    b. Male, and Female
    c. War, and Peace
    d. All of the Above

Estimated Mouse Population at the Pennypack Ecological Restoration Trust vs. Reported Incidence of Lyme disease in Pennsylvania

By Erika Clark
Arcadia University

BACKGROUND

The purpose of this research paper is to determine if the mouse population at the PennyPack Trust is correlated with occurrence of Lyme disease state wide.

Mark-recapture studies of white footed mice, Peromyscus Leucopus, were held at the PennyPack Ecological Restoration Trust in Huntingdon, Pennsylvania in order to estimate the population sizes over six years. The common method of ear tagging has been shown not to interfere with the daily activities of mice, or increase their chances of mortality. [1]

White-footed mice are primary hosts of the black-legged tick, Ixodes scapularis, which is the vector of Borrelia burgdorferi, the bacteria that cause Lyme disease in humans. [2] [3] Adult ticks feed and mate on white-tailed deer, then drop to the ground in autumn to lay eggs in the following spring. [4] [5] Larvae hatch in the summer and attach to white-footed mice, which infect them with B. burgdorferi during their blood meal. [6] [7] The larvae grow to nymphs, which live through the winter on the forest floor. One year after hatching, infected nymphs seek vertebrate hosts and transmit B. burgdorferi to them. [2] [4]

HYPOTHESIS

If the mouse population is high, then the incidence of Lyme disease will also be high. Mouse population will be correlated with the occurrence of Lyme disease because mice are vectors for black legged ticks, which transmit Lyme.

PROCEDURE

Fifteen trapping stations were set up on a wooded area of the Pennypack property. Each station was marked with flags, and contained two Sherman-type live traps. Traps were set in the evenings during the study. Four cotton balls were placed in the traps to keep the mice warm overnight and sunflower seeds were used as bait. The baited and loaded traps were placed on the ground in camouflaged areas.

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[1] Parmenter, C.A, T.L. Yates, R.R. Parmenter, J.N. Mills, J.E. Childs, M.L. Campbell, J.L. Dunnum, and J. Milner. 1998. "Small mammal survival and trapability in mark–recapture monitoring programs for Hantavirus."

[2] Barbour, A.G and D. Fish. 1993. "The Biological and Social Phenomenon of Lyme disease." Science. 260:1610-1616

[3] Lane R.S, J. Piesman, and W. Burgdorfer. 1991. "Lyme borreliosis: relation of its causative agent to its vectors and hosts in North America and Europe." Annual Reviews: Entomology: 36, 587.

[4] Fish, D. and H. Ginsburg. 1993. "Ecology and Environmental Management of Lyme Disease." Rutgers University Press, New Brunswick, NJ.

[5] Wilson M.L, S.R Telford III, J. Piesman, and A. Spielman. 1988. "Reduced Abundance of Immature Ixodes dammini (Acari: Ixodidae) Following Elimination of Deer." Journal of Medical Entomology 25: 224-228.

[6] Levine J.R, M. L. Wilson, A. Spielman. 1985. Mice as Reservoirs of the Lyme disease Spirochete. American Journal of Tropical Medicine and Hygiene. 34(2):355-360.

[7] Ostfeld R.S, M. C. Miller, and K. R. Hazler. 1996 "Causes and consequences of tick (Ixodes scapularis) burdens on white-footed mice (Peromyscus leucopus)", J. Mammal, vol. 77, p. 266-273.

The following morning, traps with no inhabitants were emptied of their cotton balls and seeds, which were discarded, and replaced in a sprung position in order to avoid unintended captures. Non-target animals found in the traps were immediately released.

Traps with mice were emptied into a mesh bag by IUCUC-certified students wearing gloves. The bag was then zipped so the mouse could not escape. Mice that were not already tagged were weighed inside the bag, and the weight of the bag was subtracted later. The mouse was isolated in the bag by the student wearing gloves in order to determine the mouse's sex. A small tag was placed into a set of tagging pliers and the unit was sterilized with rubbing alcohol. The mouse's ear was poked through a hole in the mesh bag and sterilized before being pierced by the tag. The mice were then returned to the wild and the bag was weighed before the cotton balls and seeds were discarded. The stations, tag number, and weight of the mice were recorded. Recaptured mice were recorded according to their tag number and location, and returned to the wild. The population was estimated using the Peterson-Lincoln Index for each day of trapping, and these values were averaged together for each year the study was conducted.

Following the mark-recapture study, data about Lyme disease occurrence was collected from the CDC, and data was synthesized using the SPSS program.

DATA

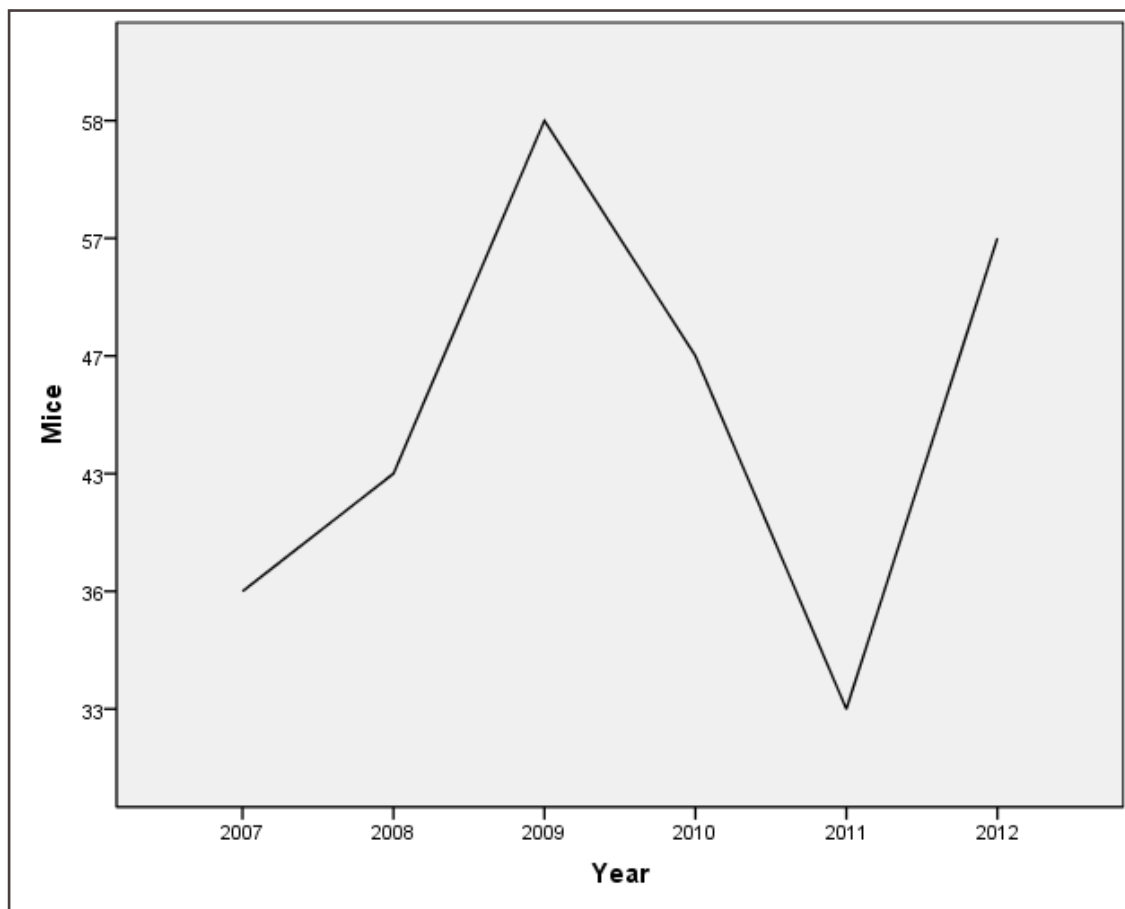**FIG. 1:** Estimated mouse population over the past six years

FIG. 2: Population Estimates by Year

	2007	2008	2009	2010	2011	2012
DAY 2	-	30	32	53	32	51
DAY 3	26	44	66	37	39	30
DAY 4	39	36	77	42	36	70
DAY 5	42	60	56	54	24	76
AVERAGE	36	43	58	47	33	57

FIG. 3: Reported cases of Lyme disease by state, 2007-2011

STATE	2007	2008	2009	2010	2011	
					Confirmed	Probable
PENNSYLVANIA	3994	3818	4950	3298	4739	623

http://www.cdc.gov/lyme/stats/chartstables/reportedcases_statelocality.html

FIG. 4: Correlations concerning Lyme disease incidence and weather patterns in Pennsylvania from 2006 to 2010
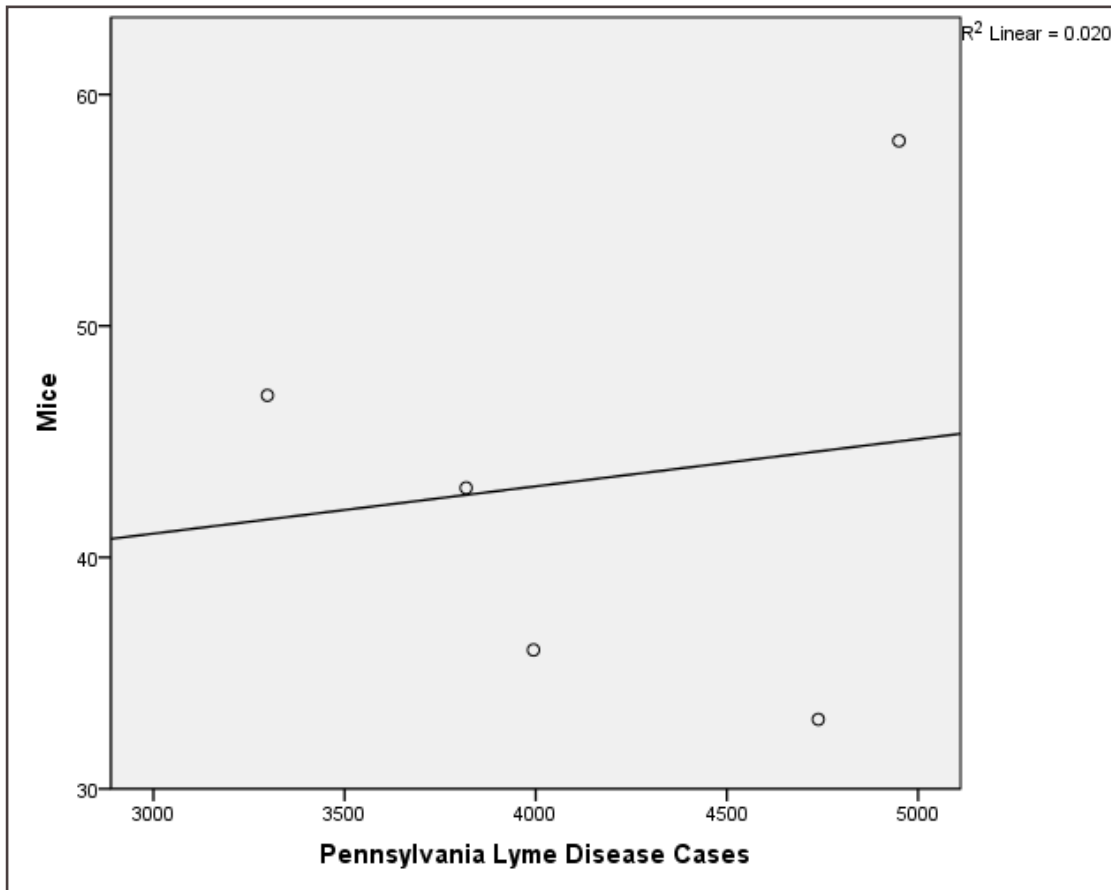
CORRELATIONS		PENNSYLVANIA LYME DISEASE CASES	FALL/WINTER TEMP	FALL/WINTER LOWEST TEMP	FALL/WINTER SNOW	FALL/WINTER RAIN	SPRING/SUMMER TEMP	SPRING/SUMMER RAIN
PENNSYLVANIA LYME DISEASE CASES	Pearson Correlation	1	-.398	-.865	-.270	-.856		.741
	Sig. (2-tailed)		.507	.058	.660	.064	.358	.152
	N	5	5	5	5	5	5	5
FALL/WINTER TEMP	Pearson Correlation	-.398	1	.035	.068	-.549	-.340	.297
	Sig. (2-tailed)	.507		.948	.898	.259	.510	.567
	N	5	6	6	6	6	6	6
FALL/WINTER LOWEST TEMP	Pearson Correlation	-.865	.035	1	.302	.606	.791	-.612
	Sig. (2-tailed)	.058	.948		.560	.206	.061	.197
	N	5	6	6	6	6	6	6
FALL/WINTER SNOW	Pearson Correlation	-.270	.068	.302	1	.172	.643	.491
	Sig. (2-tailed)	.660	.898	.560		.745	.168	.322
	N	5	6	6	6	6	6	6
FALL/WINTER RAIN	Pearson Correlation	-.856	-.549	.606	.172	1	.594	-.643
	Sig. (2-tailed)	.064	.259	.203	.745		.214	.168
	N	5	6	6	6	6	6	6
SPRING/SUMMER TEMP	Pearson Correlation	-.530	-.340	.791	.643	.594	1	-.249
	Sig. (2-tailed)	.358	.510	.061	.168	.214		.634
	N	5	6	6	6	6	6	6
SPRING/SUMMER RAIN	Pearson Correlation	.741	.297	-.612	.491	-.643	-.249	1
	Sig. (2-tailed)	.152	.567	.197	.322	.168	.634	
	N	5	6	6	6	6	6	6

FIG. 5: Incidence of Lyme disease vs. fall and winter rainfall
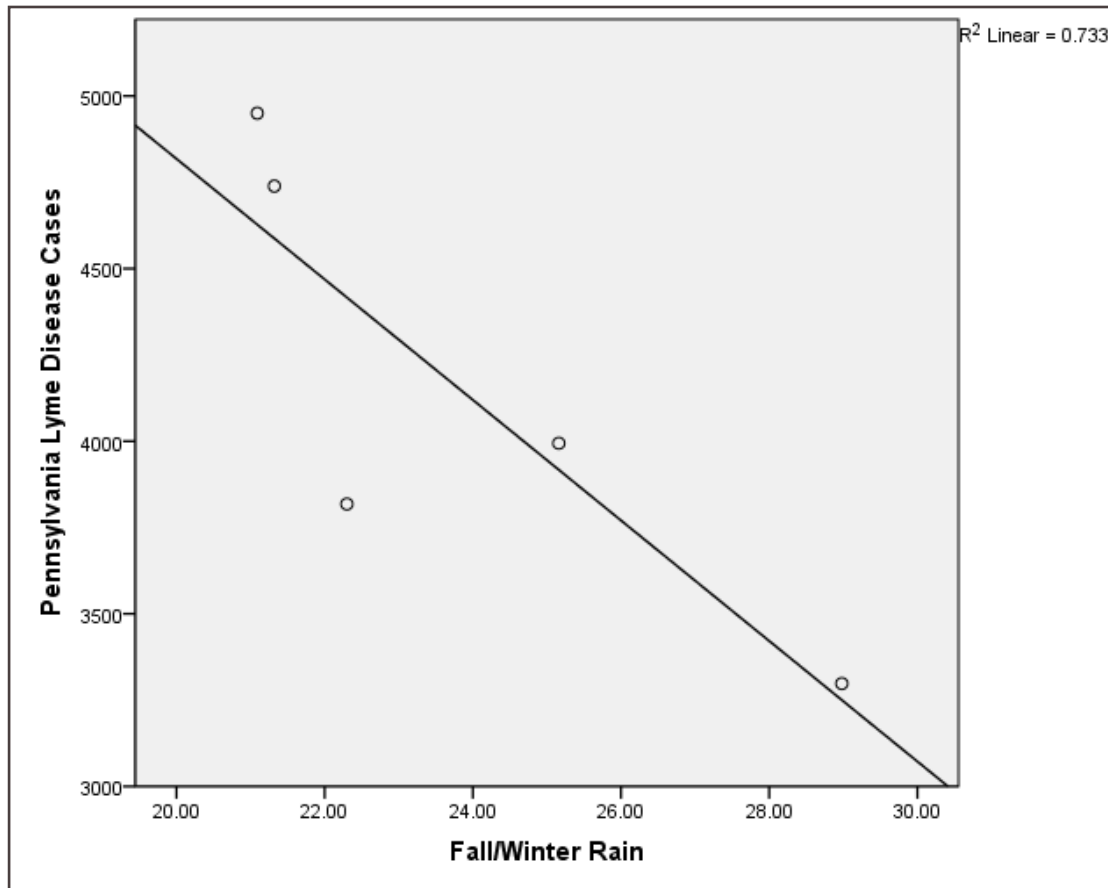
CORRELATIONS		PENNSYLVANIA LYME DISEASE CASES	FALL/WINTER RAIN
PENNSYLVANIA LYME DISEASE CASES	Pearson Correlation	1	-.856
	Sig. (2-tailed)		0.64
	N	5	5
FALL/WINTER RAIN	Pearson Correlation	-.856	1
	Sig. (2-tailed)	0.64	
	N	5	6

FIG. 6: Number of mice vs. incidence of Lyme disease

CORRELATIONS		MICE	PENNSYLVANIA LYME DISEASE CASES
MICE	Pearson Correlation	1	.141
	Sig. (2-tailed)		.821
	N	6	5
PENNSYLVANIA LYME DISEASE CASES	Pearson Correlation	.141	1
	Sig. (2-tailed)	.821	
	N	5	5

DISCUSSION AND CONCLUSIONS

Fig. 1 shows that the mouse population is not constant- the graph illustrates a fluctuation between 33 and 58 mice over the past six years. The oscillation pattern may indicate that the population fluctuates around a carrying capacity. If this were true, then it could be expected that prevalence of Lyme disease would also fluctuate from year to year. Fig. 2 summarizes population data over the past six years, and Fig. 3 shows the CDC's reported cases of Lyme disease in Pennsylvania. Upon comparing figures 2 and 3, it is evident that reported cases of Lyme

disease do not fluctuate with mouse population.

Fig. 4 summarizes the relevancy of correlations of Lyme disease with seasonal weather patterns. Fig. 5 shows that, curiously, incidence of Lyme disease decreases as rainfall in the autumn and winter increase. This may be because adult ticks must stay on the ground in the fall, and as precipitation increases they may get washed away or drown, never laying their eggs and therefore lowering the population of ticks to become infected in the spring. Moreover, infected nymphs must also survive the winter on the forest floor. If these are killed by rainfall, then there will be less cases of Lyme that year because the nymphs do not find human hosts.

The data comparison rejects the hypothesis that Lyme disease incidence would increase as mouse population increased. Fig. 6 shows that mouse population at Pennypack and reported cases of Lyme disease in Pennsylvania are unrelated. This may be due to limited data- there were only five years of mouse data to compare. The disjuncture may also be due to changes in white deer population, which has not been monitored in this study. If the deer population was altered over the course of this study, then the population of black legged ticks may have been changed accordingly because the ticks require deer in order to reproduce.

Furthermore, mathematical errors may have occurred while estimating mouse populations. The Petersen-Lincoln Index assumes that there are no mortalities or births during the study, no immigration or emigration, and what is observed in the sample reflects the population. If any of these assumptions are not true, then the estimated populations will not reflect the actual population of mice. In order to collect more accurate information about the correlation of Lyme disease and mouse population, data from the PennyPack Trust must be collected for several more years, and analyzed with a formula for population that assumes less- like the Jolly-Seber Index. More information about Lyme disease from the CDC must be collected for each year the study takes place. The more specific the Lyme disease data is to the location of the study, the more accurate the correlation will be, so county-specific data should be collected and used in the comparison instead of statewide data.

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An Overview of the Triceratops

By Sarah Kanavy
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A long, long time ago, magnificent creatures roamed the Earth. Although these creatures may have varied greatly in size, shape, color, or dietary needs, the one thing that these creatures all had in common was a specific clade: Dinosauria. A part of this clade was one dinosaur in particular, Triceratops horridus, which is Greek for "three-horn face". They received this name because of the three horns protruding from their face: two long ones above their eyes and a shorter one from their nose. Fossil evidence shows that Triceratops horridus lived during the Late Cretaceous period and was one of the last dinosaurs to exist before the Cretaceous-Tertiary extinction occurring approximately 65 million years ago.[1] Although these dinosaurs have long since been extinct, they have certainly left their mark on Evolution. Their presence in fossils can tell us about the organisms themselves, what the environment was like during the time they lived, and can help us understand what led to their extinction in the first place.

Fossils

Fossils, or the buried remains of once living organisms, are one of the greatest tools to help us increase our knowledge of the past and the organisms it contained.[2] Without fossils, we would not be able to surmise what kind of organisms once lived, what weather patterns have occurred over time, how the continents have shifted, how traits evolved, and what kind of divergence has occurred in phylogeny. Likewise, the fossils of Triceratops horridus are invaluable because of the library of information each one contains. However, it can be difficult to discover fossils due to a variety of reasons. Predators can prey on a dead body, taking body parts away from the original location and moving them elsewhere, remains can be broken by other animals, and weathering can take place).[3] Because bone is made out of calcium-sodium hydroxyl apatite, which is more susceptible to weathering, it usually loses the calcium-sodium hydroxyl apatite after fossilization and fills up with other minerals.[4] There are also many other types of dinosaur fossils that are not bones. For example, scientists have dug up fossilized feces, called coprolites, which tell them about the diet of dinosaurs; they have also found fossilized eggs, skin impressions, and footprints in sedimentary rock.[5]

Not only is it hard for an organism's remains to become fossils, it is a challenge for paleontologists to recover those fossils. Successful extraction revolves around four steps: planning, prospecting, collecting, and preparation/curating.[6] Planning involves putting together and expedition team and figuring out where to look based on scientific calculations. The expedition teams consist of scientists with varying specialties who not only have been studying the field for many years, but who have also had years of experience. [7] It is important to have professionals perform the excavation, especially for dinosaurs, because the fossils are limited and any damage done during the process can destroy any hope of having access to the same information again. The planning side to paleontology focuses on a few questions to help determine where a fossil could be located. What was the dinosaur's environment? When did it live? What caused its death? Scientists then work to find rocks that match the location and the time period.[8] After planning comes prospecting, or searching for the fossils. Once fossils

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[1] National Geographic, "Triceratops Horridus." Accessed December 4, 2012.

[2] David Fastovsky and David B. Weishampel. Dinosaurs: A Concise Natural History. New York: Cambridge University Press. 2009.

[3] Ibid.

[4] Ibid.

[5] Ibid.

[6] Ibid.

[7] Ibid.

[8] Ibid.

have been located, the collecting stage begins. This is always a delicate process and takes time to do it properly. One of the challenges in prospecting comes in transporting the fossils to a place where they can be studied safely. The fossil and its matrix, or the rock encasing the fossil, has the potential to be large in size and can weigh hundreds of pounds.[9] Once a fossil has finally been removed from the rock, it is taken to be studied in a lab. It undergoes many processes to remove it from its matrix and prepare it for study or show. Even though the entire process is time consuming and tedious, it is one that leads to better understanding of an extinct species.[10] Up to this point, paleontologists have found skulls, complete skeletons, and partial skeletons of the Triceratops horridus.

MEET THE TRICERATOPS HORRIDUS

The Triceratops horridus was an intimidating dinosaur that was very distinctive from the other members of its clade. Fossils have been excavated that indicated the Triceratops was about thirty feet long, ten feet tall, and weighed approximately four to six tons. It is easily recognized by its unique anatomy. Its most distinguishing features are its three facial horns and its bony frill, which measured approximately six feet across and sits just behind the face. There are many theories surrounding the purpose of the frill. Some scientists believe it was meant to protect the neck from attacking predators, for attracting mates, or for regulating body temperature.[11]

Even though the frill was a distinguishing trait of Triceratops, it was not the trait that gave the genus its name. The genus was so named because of their three facial horns. After a juvenile Triceratops skull was excavated, scientists began to question how the horn growing out of the nose came to be. Based on the stage of growth the juvenile was in, scientists determined that the horn was a separate bone that, over time, fused to the skull where it continued its growth.[12] After excavating more juvenile skulls, scientists were able to determine how the small nubs above each eye developed into the larger horns seen in the adult form. The small projections in baby skulls point forward, backwards and curved up in juveniles, and forward with an upward curve at the end in adults. This evidence suggests that the horns grow from their bases.[13] Perkins says that because about one third of the adult horn was hollow in its base, it was unlikely that the horns were used for combat.[14] If Triceratops had used them for fighting predators or each other, they would have suffered damage easily. It is more likely that the horns were used for species recognition or for sexual displays.[15]

CRETACEOUS CLIMATE

What was it like for these dinosaurs to live during the Cretaceous time period? During the first half of the time period, the temperatures were warm and there was not much seasonality. There were mountain formations, sea-floor spreading, high sea levels, and broad seas. In the late Cretaceous period, the continents appeared similar to how they look now, except North America was extremely isolated.[16] This could be the reasoning as to why Triceratops was confined to North America: they were terrestrial dinosaurs and could not cross the sea to reach any other land mass.

The Cretaceous time period was the time when the beginnings of our modern organisms appeared. Scientists found the first fossils of "many insect groups, modern mammal and bird groups, and the first flowering plants," [17]

9 David Fastovsky and David B. Weishampel. Dinosaurs: A Concise Natural History. New York: Cambridge University Press. 2009.

10 Ibid.

11 National Geographic, "Triceratops Horridus."

12 Sid Perkins. "How did Triceratops grow its horns?" In Science News, vol. 160. 2001.

13 Ibid.

14 Ibid.

15 Ibid.

16 Fastovsky and Weishampel. Dinosaurs: A Concise Natural History.

17 University of California Museum of Paleontology, "The Cretaceous Period." Last modified June 15, 2011.

Flowering plants, or Angiosperms, appeared in the fossil record approximately 125 million years ago. They thrived in many different environments such as arid, damp, and at high altitudes. Conifers, cycads, and other gymnosperms, went through the Cretaceous period unchanged, but by the middle, species diversification took off.[18] By the end of the Cretaceous period, the forests began to look similar to the forests we have today in North America. They contained oaks, hickories, and magnolias.[19]

THE EXTINCTION OF TRICERATOPS HORRIDUS

Did these environmental changes cause extinction? Some scientists speculate that it could have been the driving force. According to National Geographic, "the shifted continents, expanded coasts, and widened oceans had cooled and moistened the planet's climate and set in motion dramatic changes to the flora and fauna,".[20] Organisms may not have been able to respond and adapt to the quickly changing environmental conditions, which could have caused a mass extinction.

There are many extinction theories that were dismissed due to insufficient evidence or timing issues. There was theory that a volcano eruption could have caused their extinction. This extinction theory was dismissed because the timing of the eruptions occurred approximately 400,000 years too soon. Researches actually came to the conclusion that the eruptions warmed the Earth, making life easier for many animals, not harder.[21] A more prominent theory revolves around the idea that an asteroid is the culprit behind the extinction of the dinosaurs. Even though this theory is still subject to revision, after years of discussion, it has been decided that a massive asteroid is the cause of the mass extinction. The asteroid that killed the dinosaurs created the Chicxulub Crater found on Mexico's Gulf Coast.[22] Some scientists suggest that there were multiple asteroids, but there is a lack in supporting evidence. They are basing their theory on the discovery of several sites near Chicxulub that looked as if there had been various impacts, but it is likely the asteroid mixed up the layers of sediment and spread it across locations around the crash site.

The Chicxulub theory has been upheld because there is ample evidence to support it. Iridium—an element found in extraterrestrial material—was located at three hundred and fifty sites around the world. These traces of Iridium could be traced back to the Chicxulub location. In fact, in some areas of the crater, the layer was eighty meters thick which points to a single impact.[23] Scientists have discovered that the asteroid was approximately ten kilometers wide, causing the crater to be one hundred kilometers wide and twenty-five to thirty kilometers deep. An impact by an object so large would have caused earthquakes, tsunamis and landslides, all of which are enough to cause extinction.[24] In addition, the crash would have been the cause of acid rain in darkness—both of which would be devastating to plant life in particular because they rely on water and sun for photosynthesis. If the plants were wiped out, the entire food chain would be altered, first by herbivores then by carnivores.[25]

TRICERATOPS HORRIDUS TODAY

Although it has been centuries, even millennia, since Triceratops Horridus have roamed the earth, their existence has not been erased or forgotten. During the 1880s, a fossil of the great creature was found in Wyoming by John

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[18] University of California Museum of Paleontology, "The Cretaceous Period." Last modified June 15, 2011.

[19] Ibid.

[20] National Geographic, "Cretaceous Period." Accessed December 2, 2012.

[21] Katherine Harmon. Scientific American , "A Theory Set in Stone: An Asteroid Killed the Dinosaurs, After All." Last modified March 4, 2010.

[22] Ibid.

[23] Ibid.

[24] Ibid.

[25] Ibid.

Bell Hatcher.[26] Currently, it resides in the Smithsonian National Museum of National History. The first exhibit of the Triceratops opened in 1905 and was comprised of bones from about twenty different dinosaurs.[27]As discussed earlier, the fossils of the Triceratops are extremely fragile. It is easy for cracks to develop, and some bones are infected with pyrite disease, which causes them to break from the inside out.[28] The scientists at the Smithsonian are taking careful precautions to keep the bones well preserved. Originally, curators used glues and other chemicals to attempt preservation, but over time and after human interaction, these materials began to deteriorate and even caused internal damage to the bones.[29] Today, the skeletal mount on display in the museum is not even the real fossil. Nowadays, it is common to make moldings and castings of the real bones and put those on display instead of the original fossil. This is a process known as stereolithography. With the help of advanced technology, the Smithsonian was able to use "data from the original bones that [they] have manipulated in the computer to produce far more accurate replacements,".[30] The bones were three-dimensional laser scanned, sent to a three-dimensional prototyping machine, and then cast in fiberglass and plaster.[31] For appearances sake, the castings are drilled so that internal framework can be used to lend support.[32]

According to the Smithsonian's website, the bones that have been computer generated are the skull, the left humerus, the left shoulder blade, and part of the left hip bone.[33] Some people may think that an exhibit without the original fossils would not be as exciting as one with plaster representations. However, according to Perkins, Ralph Chapman, a Smithsonian paleontologist, believes that although the plaster bones are "less-real", they are able to portray a more accurate representation of how the Triceratops appeared while they were alive.[34] These preservation techniques allow for museum goers to enjoy the sight of the Triceratops without harming its last remains so that scientists can continue studying the fossils, possibly making more discoveries in the future.

[26] Smithsonian National Museum of Natural History, "Triceratops." Last modified May 2001.

[27] Sid Perkins. "A Makeover for an Old Friend". In Science News, 300-302. 2000.

[28] Smithsonian, "Triceratops".

[29] Perkins, "A Makeover for an Old Friend".

[30] Smithsonian, "Triceratops."

[31] Ibid.

[32] Perkins, "A Makeover for an Old Friend."

[33] Smithsonian, "Triceratops."

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"The creation of the COMPASS...reflects our collective effort to expand the reach of our students, extend their intellectual horizons, and instill and solidify the courage of the nascent who must, of necessity, throw themselves at the mercy of the crucible of the assay room in the marketplace of ideas."

- Dr. Steve O. Michael, Provost and Professor of Higher Education Management, Arcadia University