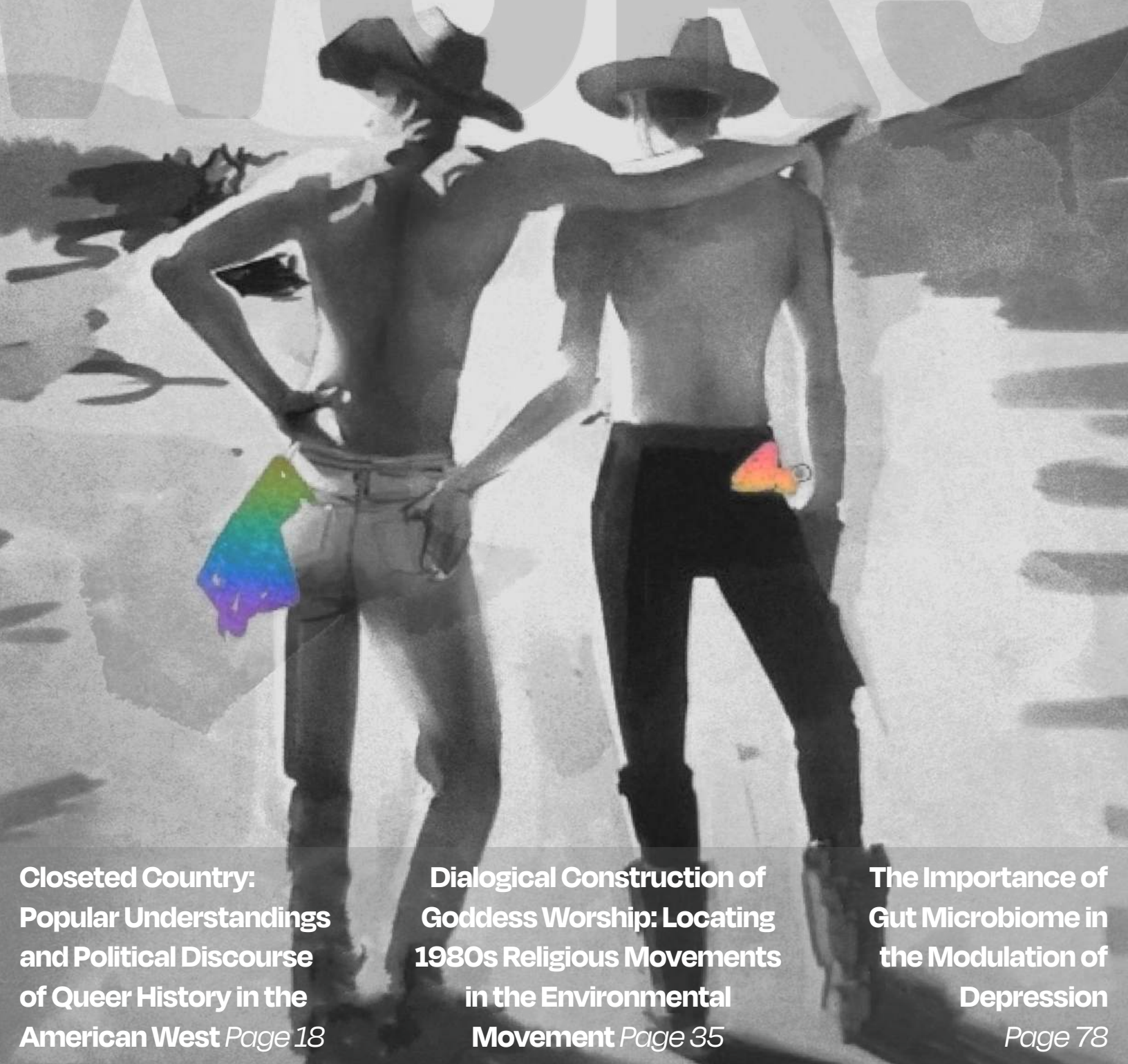


# Williams Undergraduate Research Journal



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Dear Reader,

It is my honor to present you with the third edition of the Williams Undergraduate Research Journal (WURJ)—Williams College's first and only peer-reviewed journal highlighting student research across academic disciplines. Despite the exceptional work being conducted by students, prior to our founding, most research papers at Williams did not move beyond the class that they were originally written for. To address this issue, WURJ was born in the fall of 2020 with the hopes of serving as a formal platform for students to disseminate their work to the broader Williams community. Additionally, WURJ aims to give students experience with the peer-review process as preparation for careers in academia and research.

However, WURJ is so much more than a journal. Over the past year, I am proud to say that we have done tremendous work in demystifying research and academia at Williams. In the fall semester, WURJ held its first Student Research Panel. This event was a resounding success with over 70 attendees coming to hear Williams students describe their unique experiences performing research within the Natural and Social Sciences fields. At this event, we also released the next edition of the print journal, opened submissions for the following publication, and announced a new longitudinal partnership with the Office of Institutional Diversity, Equity, and Inclusion to provide a platform for publishing underrepresented minorities in research. This spring semester, WURJ hosted a series of 6 small group dinners with faculty from historically underrepresented backgrounds in their respective fields. The dinners helped facilitate honest conversations about academic life with a focus on the particular barriers to research faced by minorities in academia. Through these closed-door discussions, we aimed to provide students with an

unfiltered view of academic publishing and research, hoping that they could draw on the advice of those who came before them.

In the spirit of the liberal arts mission of Williams College, we selected articles for the 2023-24 print edition that highlight both the breadth and depth of academic work being conducted by students at the College, many of which have been adapted from projects for classes and independent studies. Accordingly, I strongly encourage any Williams student interested in getting published, to visit the submission form on our website ([sites.williams.edu/WURJ](https://sites.williams.edu/WURJ)) for more information.

The papers in this issue cover topics ranging from the United States' imperialism in Central America to the visual origins of Black suffering in digital culture to the importance of microorganisms in modulating depression—all presenting widely different, yet valuable, perspectives for understanding and interpreting our world. It is my sincere hope that after reading these articles, you can come away not only with new knowledge on a diverse range of subjects, but also an increased curiosity for the concepts mentioned within.

In addition to my deep gratitude for all of the students serving as authors, editors, graphic designers, and board members of WURJ, I also want to extend a big thank you to the faculty and staff members who have committed their time and effort to help us achieve our goals. I am immensely grateful for everyone that has joined us on this journey. Without further ado, I hope you enjoy this latest edition of WURJ.

Sincerely,  
Daniela Galvez-Cepeda  
2022-23 Editor in Chief of WURJ



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# My People: The Visual Origins and Viral Spectacle of Black Suffering in Digital Culture

Kimberlean Donis '23

## Abstract

For this study, I will explore the intersection between Black visual culture and digital landscaping. This research is primarily concerned with answering one question: how do contemporary technologies replicate and systematize the visual tradition of Black suffering in western political systems and digital landscapes? During the early days of the Internet, many theorized that the emergence of virtual environments and a culture of fantasy would preclude a mass cultural exodus into a digital sphere free from conceptions of race and the experience of racism. However, in reality, the Internet has not provided an escape route from either race or racism, and it has only amplified their existence. Race and racism persist online in ways both new and unique to the Internet, alongside vestiges of anti-Black visual traditions that exist both offline and on.

Within our contemporary moment, it has become critical to assess the extent to which digital landscapes act as a mode through which we engage with racism. In this paper, I analyze the literature on race and racism in Internet studies and venture into my own explanations as I wrestle with the visual nature of modern Black culture, which has left us with a digital landscape thriving off contemporary reproductions of racial slavery. My explanations focus on the broad areas of (1) visual culture and Blackness, (2) the visual tradition of brutality, (3) and a comparative approach to Black utopianism. Then, drawing on a range of theoretical perspectives from Saidiya Hartman, Darby English, and Susan Sontag, among others, I offer an analysis and critique of the new and expansive intersection between Blackness, digital and visual culture. My goal in this paper is to further the elusive conversation surrounding the meaning of visual culture and argue that the spectacle and aspects of the aesthetic nature of the Black body are recurring in a culture of white supremacy and racism. When placed within contemporary digital

technologies, the visual image of Black suffering could be classified as trendy, placing visions of Black trauma back into our worldview in a manner conducive to an aesthetic form that has never truly disappeared, just evolved. In building on previous research, this study examines how aesthetic racialization and white supremacy are salient factors in various visuals of Black suffering embedded within contemporary technologies.

## Introduction

The question of the representation of Black people in western landscapes is not new, and contemporary Black visual ecologies is a complex field in which to pursue scholarly research. More so, the complexity and richness of Black visual culture continue to elude our art historical discourse. The reasons for this are several, but the most convincing of them is the dearth of a viable approach to critical Black art historical research and, more critically, our inability even to contextualize the haptics of Black visuals. This paper explores aestheticism and technology as it posits one critical question: how do contemporary technologies replicate and systematize the visual tradition of Black suffering in western political systems and digital landscapes? I respond to this call by grappling with: visual technology, aesthetic racialization and scholars each of which have written about emerging correspondences between virtual and physical worlds, human and machine processes, Black visual traditions, and their physical realizations. This work attempts a synthesis; rather than working with traditional archival material, I delve into a vast, virtually unexplored reservoir of digital material that has been amassed over decades by art historians, philosophers of science, and Black communities on the visual representation of the Black body in physical and technological practice.

We live in a culture reliant on fear and terror, and in my work and through my experience, I have recognized

recognized that Black bodies are in a perpetual state of suffering. To be Black is to be profoundly vulnerable. In understanding this, this paper explores the origins and continuing impact that terror has left on western cultures, with an emphasis on the digital reproductions of suffering. My primary focus is on photographic images, including but not limited to photographs of enslaved people, police brutality, and lynching victims, because they provide the unique opportunity to highlight that an integral portion of western culture is the hyper-visibility of Black suffering. And within this examination, this paper will look at the time period from the 19th century to our contemporary moment, highlighting key moments in Black history including but not limited to slavery, Jim-Crow, the death of Emmett Till, and the recent emergence of the Black Lives Matter Movement. This framework of thought highlights a wide range of significant political shifts in recent US history, with one common denominator being that despite the widespread belief that the condition of Black life is improving, anti-Black violence is continuing, hence the seemingly endless visual ecology of Black woundedness this project continues to expose me to. Moreover, I utilized the visuals I found through a rigorous digital search for both archival material and recently trending digitals, such as the murder of George Floyd, to continue the discussion of aesthetics and suffering. In reviewing the work of Courtney R. Baker, Susan Sontag, and Safiya Umoja Noble, among several others, their work each establish a unique foundation that each astutely questions the visual politics of suffering. Rather than being a neutral arbitrator, each scholar has found relevance in not only arguing that humanity's ethics of seeing are inherently flawed but also that our contemporary moment has allowed itself to forget the genealogy of the view of Black woundedness, because in confronting our politics of sight we must confront the root of anti-Blackness.

It becomes clear that at the forefront of this project is also the fact that representations of Black suffering are inherently political. Black hyper-visibility equals death and while this interrogation of sight is not inherently a critique of digital landscaping and online discourse, I wish for my investigation to examine the voyeuristic lure of suffering, how the gaze of anti-Blackness develops in technology and practice, and most importantly, how that gaze feeds into an even larger history of perception itself. Furthermore, despite these already powerful configurations, the repetitional

nature of these painful visuals have co-opted the algorithms that dominate everyday life allowing contemporary technologies to replicate and systematize the visual tradition of Black suffering in western political systems and digital landscapes through the mechanisms of the body and visual repetition. Just as the visual is political, politics itself is visceral in the sense that experience arises from the physiological. The previous usage of the term "mechanisms of the body" references the paradoxes of body and idea as we position flesh as a material capable of retaining societal structures and values. This paper's goals are thus located on a meta-level as we both expose how racist visual traditions have been promulgated through the spectacle of wounded Black bodies and argue that such images only reaffirm that our visual interests remain unchanged despite political belief.

### Visual Culture

Humanity has continuously grappled with the word 'culture' and its definition, practice, and embodiment. Visual culture is just a small understanding of the polemical word 'culture' as it regards images as central to the representation of meaning in the world. Rather than aligning itself with a distinct discipline, visual culture is hybrid, formed as a consequence of the convergence of various methodologies.<sup>1</sup> Eilean Hooper-Greenhill defines visual culture as the intricate way humanity can begin to grasp how we engage in looking. She states, "Visual culture works towards a social theory of visibility, focusing on questions of what is made visible, who sees what, how seeing, knowing and power are interrelated. It examines the act of seeing as a product of the tensions between external images or objects, and internal thought processes."<sup>2</sup> It is intertwined with everything we encounter daily that communicates through visual means. From the landscapes we encounter to the clothes we wear, all down to the advertisements and social media posts deliberately chosen for our liking, visual culture focuses on all questions of the visible and its spectator. Moreover, with these cultural intersections implicated within this form of culture, we are confronted

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<sup>1</sup> Morra, Joanna. "Visual Culture: What Is Visual Culture Studies?," (Oxford: Routledge Press, 2006), p 21.

<sup>2</sup> Hooper-Greenhill, Eilean. "Museums and the Interpretation of Visual Culture," (Oxford: Routledge Press, 2000), p 14

not just with art history but also the social sciences and history itself, as sight, knowledge and power are all inextricably related. It is crucial to add that the term visual culture, which we often use as a contemporary mode of analysis to explain and give meaning to the complexity of the concept, did not exist before the 1970s. The emergence of visual culture studies as a field of inquiry began from a pedagogical and practice-based imperative as educators reckoned with a need in higher education for students to equip themselves with the interdisciplinary tools necessary to mobilize their craft. However, the purpose of ‘defining visual culture’ is undoubtedly expansive as the<sup>3</sup> terminology dates back to a line of ancestry that extends well beyond the beginnings of the canon of art history. Arguably, one of the first representations of visual culture was created by Neanderthals and dated back at least 25,000 years ago to rudimentary cave paintings, but that is a discussion for another time.<sup>4</sup>

Returning to the early 1970s, a new consideration of the role of the visual, adjacent technologies and the subjectivities that are embroiled in these relations became a critical emerging issue for scholars, thus forming visual culture studies. The late twentieth century is characterized as a time of epochal technological change. Within this moment, a new degree of saturation of social issues engulfed visual technologies, shifting their social function and inherent purpose.<sup>5</sup> Many art historians locate the emergence of visual culture to this sharp rise in use and access to visual technologies. However, the cutting edge of visual cultural studies understands that visuality and the visual technologies that mediate it are part of a larger social project that continues to transform how we behave, interact and communicate.

Moreover, since 1995, the world has shifted toward globalizing the Internet as a media and communicative visual form. Similar to the claims of Steven Shaviro, “the Internet and the World Wide Web are no longer places for pioneers to explore and stake their claims; they

have been absorbed into the texture of our everyday life. If Barlow’s exceptionalism with regard to cyberspace seems dated, this is simply because virtual reality is no longer an exception; today, it is everywhere and everything.”<sup>6</sup> Despite being a powerful methodological phenomenon, visual culture is frequently restricted to being a mere subsection of art history when the concept deeply concerns media studies, history, psychology, and philosophy. At its core, it intervenes with nearly every facet of society implicated by the ramifications of symbolic pieces in the non-academic realm.<sup>7</sup> In sum, visual culture is a vast umbrella term that will consistently be utilized and reinvestigated throughout this paper to capture the visual complexity of Blackness and the technologies both utilizing and capitalizing upon it.

### **Empathy and Visualizations of Black Pain**

Black has always been a complex, even contradictory color. It is a material substance, a method, mode, and way of existing within the world that necessitates complex thinking on the viewer’s part. However, for this paper, we will formally view Blackness as an identity and self-naming of a diaspora as this is, arguably, the lens through which we interpret all aspects of Blackness.<sup>8</sup> It is crucial to add to this discussion that Black visual culture exists in two realms: one where we create solely for our consumption and cultural pride, in which Black people are the spectator of our narratives, and another in which we are the object up for contestation. This paper is primarily concerned with the latter as we encounter the reality that Blackness and its visually algorithmic reproductions have fundamentally sustained and arguably built themselves off the visual tradition of Black suffering. Furthermore, as expansive as visual culture is, this paper primarily concerns issues specific to that of Black visual culture and its contemporary reproductions within the twenty-first century. Historically, Black imagery has served not only for the use of scientific rationality regarding the myths of biological

<sup>3</sup> Morra, Joanna. “Visual Culture: What Is Visual Culture Studies,” p 12.

<sup>4</sup> “A Brief History of the Internet: Sharing Resources,” University System of Georgia Learning Center, [https://www.usg.edu/galileo/skills/unit07/internet07\\_02.phtml](https://www.usg.edu/galileo/skills/unit07/internet07_02.phtml).

<sup>5</sup> “Visual Culture,” Encyclopedia, <https://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releases/visual-culture>.

<sup>6</sup> Nakamura, Lisa. “Digitizing Race: Visual Cultures of the Internet,” (Minnesota: University of Minnesota Press, 2007), p 2.

<sup>7</sup> Hooper-Greenhill, “Museums and the Interpretation of Visual Culture,” p 16.

<sup>8</sup> E. Patrick Johnson. “Appropriating Blackness: Performance and the Politics of Authenticity,” (Durham and London: Duke University Press, 2003), 2-6.

inferiority but also for the tools of extreme bureaucratic rationale.<sup>9</sup> However, with the reality of external political and cultural pressures and such widespread socially interactive technologies, traditional patterns endemic to Black portraiture have never been so clear and widely accessible before.

With pain being one of the most poignant of human emotions, it can be nearly impossible to articulate precisely what pain feels like—let alone capture and reproduce the multitude of forms pain can take. However, art has a proven ability to influence people's views of suffering and death. Moreover, the creation and reproduction of images within digital landscapes also provide a platform to justify suffering. There is no contextualization of the visual cues of suffering in the canon of art history that does not relate to religion. This is unsurprising as the exploration of suffering in western art has historically been reserved for depictions of Christ and his willingness to subject himself to martyrdom. In both writing and art, the Crucifixion of Christ has become multifaceted rhetoric, and it is within Christ's display of ungodly pain and mercy that suffering has become a global vehicle for humanity's understanding of suffering. With Christ's head fallen to one side, revealing an expression of both lamentation and grueling pain as blood runs from his hands and head, we see an act of grief in its most basic form. The symbolic image of Christ's crucifixion has kept art historians busy for centuries. Furthermore, despite our contemporary shift away from devotional art, we continually engage with the subject of an identifiable and universally understood metaphor for martyrdom and human suffering in the more covert ways. Although a large portion of art history has become a mechanism through which we tell Christ's story, it also provides a platform to justify suffering, depicted through triumphant images.<sup>10</sup> Moreover, within this context, I argue that grief has become an amplifier of political alarm and less so a vehicle for religious belief as we now have come to understand that in grief exists terror, and

at the heart of contemporary terror lies the Black body.

Tears, flailing arms, pain-stricken emotions plastered onto one's face, cries for help, and, more often than not, a body bound not by one's own emotions but by an external oppressive force are a few of the many signifiers of Black suffering. Instantly, we conjure images of Black bodies pinned against a floor, strung to a tree, pressing against a gunshot wound, flashes of red and blue across a face eclipsed by fear, and so on. We cannot grasp Black suffering as a symptom independent of violence and brutality. It is here where we draw the line between the fear of Blackness and the lack of value for Black life, and in this, I am forced to question the grievability of Black life when the Black body persists in a state of inconsequential mortality. The spectacle of Black suffering, whether by lynching, at the hands of state-sanctioned gun violence, or simply due to pure hate, in turn, incites a public performance of grief that confirms that even as a corpse, the Black body is mourned in a way that serves the ends of not only whiteness but pure digital engagement.<sup>11</sup>

Before encountering the spectacle of Black suffering in digital landscaping, it is crucial to explore the concept of suffering and empathy from a more formal context. It is here we must formally recognize various indicators of suffering and the real-world implications of considering what it means to be human and recognize the human body in pain. "Humanity is something that needs to be articulated and most important, to be recognized."<sup>12</sup> The interrogation of humanity is an essential component to making sense of the Black body's visual presence in the struggle for bodily integrity, equality and protection. While the discussion of humanity and our relationship to sight is not the primary subject of this paper, it is crucial to recognize that there is no guarantee that an individual's humanity is intact or protected, despite it being the norm to assume both.<sup>13</sup> The ethical implications of this conversation are immense, but a concept as fundamental as "the human" deserves

<sup>9</sup> Johnson. "Appropriating Blackness: Performance and the Politics of Authenticity," 8-9.

<sup>10</sup> Figs, Lydia. "Christ On The Cross: Depictions of the Crucifixion." Art UK. Last modified April 19, 2019. <https://artuk.org/discover/stories/christ-on-the-cross-depictions-of-the-crucifixion>.

<sup>11</sup> Mendes, Jan-Therese. 2021. "Black Death, Mourning and The Terror of Black Reproduction: Aborting the Black Muslim Self, Becoming the Assimilated Subject, Souls." *A Critical Journal of Black Politics, Culture, and Society* 22 (1): 1- 3. 10.1080/10999949.2020.1804803.

<sup>12</sup> Baker, Courtney R. "Humane Insight: Looking at Images of African American Suffering and Death," p 19.

<sup>13</sup> Ibid. p 13.



questioning when it is found to be foundational to nearly all theories concerning social ethics, political justice, and the universal condition— not only influencing our understanding of pain and death but also the proximity to which we believe one deserves their condition. It is within this unparalleled account of the human condition that argues, from a perspective similar to Afro-pessimism, that Black people do not function as political subjects; instead, our flesh has been instrumentalized for a greater societal agenda that does not include us. And whereas Afro-pessimism is a broader, more generalized argument with regard to this paper’s investigation of visual woundedness, this argument positions Blackness as almost conceptually coherent, the obvious inverse to white supremacy but an example of what occurs if the positive attributes of what it means to be human are ever in doubt. On a theoretical level, the principal value of this conversation is in our attempt to paint an accurate picture of both our social world and the limits of humanity as it becomes clear that the spectacle of Black vulnerability is the only feasible response to the reality of the Black condition.

What is crucial, though, is the question that rests at the center of this idea of thought, why are Black people so persistently not recognized as human? As we return to visual culture, we are confronted with the reality that most, if not all, contemporary depictions of Black people emerge from a site of harm and suffering. However, we still have no language to describe this suffering and its virality. This idea forces us to introduce yet another grueling question: How do we begin to grasp the visual cues of Black suffering in visual culture if many believe Black people do not experience suffering? “At best, Black people are unequal participants in the projects of Humans, or mere tools for the furtherance of Human ends. At worst, Black people are objects or targets for sadistic anti-Black violence.”<sup>14</sup>

In Susan Sontag’s “Regarding the Pain of Others,” Sontag surmises that the drive behind society’s fascination with the visual all lies in shock value. The creation and widespread circulation of dramatic images is inextricably linked to “a leading stimulus of consumption and source of

value. Furthermore, in questioning the photographs of Black people who are visibly beaten, mutilated, and inferred to be irreversibly traumatized, Sontag introduces a valid point to an already pre-existing site of rhetoric as she argues against images’ ability to capture and successfully communicate suffering without bias. The pain we see within these images reiterates the fallacies of our political system, simplifies where our anger should be redirected, and, most importantly, agitates.<sup>15</sup> The spectacle of Black pain creates the illusion of consensus, and this is arguably the perfect equation for a social uprising, but to Sontag, this is further from the truth than we like to empathize with as we have already passed a point of visual oversaturation. Simply put, our contemporary moment has framed the visual ecology and discourse surrounding Black suffering as not enough to elicit a necessary reaction; anger was replaced by apathy long ago. We have arrived at a standstill in which our exposure to woundedness has long surpassed our humanity’s need to recognize and empathize with the human condition of vulnerability.<sup>16</sup> Perhaps there is such a thing as too much pain but, in returning to the question of the photograph, Sontag approaches trauma from an explicitly ethical perspective, claiming that through the medium of photography, we can see the pain of others and readily identify vulnerabilities in the human condition. From this perspective, the photograph now becomes a means by which we may witness or be compelled to witness misery and suffering.

*“These dead are supremely uninterested in the living: in those who took their lives, in witnesses - and us. Why should they seek our gaze? What would they have to say to us? ‘We; - this ‘we’ is everyone who has never experienced anything like what they went through - do not understand. We do not get it. We truly cannot imagine what it was like. We cannot imagine how dreadful, how terrifying war is, and how normal it becomes. Can’t understand, can’t imagine. That’s what every soldier, and every journalist and aid worker,*

<sup>14</sup> Patrick O’Donnell. “Ontology, Experience, and Social Death: On Frank Wilderson’s Afropessimism,” (APA Newsletter: Philosophy and the Black Experience, Volume 20, Fall 2020), 1. <https://philarchive.org/archive/ODOOEA>

<sup>15</sup> Susan Sontag. “Regarding the Pain of Others,” The New York Times, March 23, 2003. <https://www.nytimes.com/2003/03/23/books/chapters/regarding-the-pain-of-others.html>.

<sup>16</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death,” p 13.

*and independent observer who has put time under fire and had the luck to elude the death that struck down others nearby stubbornly feels. And they are right.”*<sup>17</sup>

Contrary to belief, documentation of Black pain does not elicit enough engagement for political activation, especially when met with visual apathy. To this end, we are all witnesses, even if our witnessing tends to occur at a spatial, temporal, or technological distance. We are implicated, morally and bodily, in the distant events of anti Blackness that we also choose to immortalize.<sup>18</sup> At this intersection between morality and visuality, we stumble upon the issue of empathy. Formally understood as the ability to understand coupled with the ability to share and critically comprehend the deeply felt feelings of another, empathy is a feeling the Black diaspora has never been granted. Saidiya Hartman’s discussion of empathy from her book “Scenes of Subjection” is crucial to this conversation, as pain is arguably the common language of humanity. “As Black people, we often mistake this [pain] as the highest form of empathy and recognition.”<sup>19</sup> To paraphrase Saidiya Hartman, it [digital circulation] is just an extension of the master’s prerogative. We facilitate the imagination of people and worlds in which we play no part.<sup>20</sup> So now we return to the prevailing question, if to be Black is not to be human, how can we even understand the visuals of Black suffering we see even as depictions of grief? Visually we understand suffering to be depictions of tears, grief-stricken wailing, and an individual on their knees. But, recognition of this has proven itself to not be enough for one to understand and align themselves with the ethical and humane analysis of Blackness and visual culture. “The nature and techniques of witnessing and of seeing have changed undeniably. but the basic mechanism for learning about humanity—

the visual encounter with another being— remains.”<sup>21</sup> The multilayered connection between the racialized structure of western society and the visual nature of contemporary Black culture has left us with a digital landscape thriving off contemporary reproductions of racial slavery. Though our contemporary moment prioritizes the digital, the ideological image of a brutal past is now endlessly recycled within our algorithms, recursing through an image of the Black body defined by its proximity to enslavement and death.

### Notes on Black Suffering in the History of Art

The legacy of Black suffering, pain and vulnerability has been and continues to be a critical aspect of both American culture and the Black identity. The following section organizes the lineage of Black spectacle and death in the past century by grappling with both the rivalry between private pleasure and public disgust and by also questioning how visuals have come to shape humanity. In understanding these legacies, we can begin to lay the groundwork of our subsequent analyses keying into how we are conditioned to view Blackness as inherently wounded and deserving of this subjugation. And in understanding this framework of thought we can begin to visualize how such a significant part of the public psyche is conditioned to see Blackness as deserving of objectification, disfigurement, and degradation.

In the nineteenth century United States, visual imagery began to emerge as a powerful tool in normalizing the act of looking at the pain of another. The belief that enslaved Black bodies were made to dehumanize itself became more widespread, and it quickly became a social norm to dismiss Black expressions of pain despite the unethical conditions they were subject to. “If the slave is not human, the logic runs, he can not experience pain as a human, thereby eliminating the need or responsibility of onlookers to recognize those bodies as like their own.”<sup>22</sup> ry began to emer And just as the enslaved were dismissed of their pain, sold and exchanged, so too were their visual depictions as there was no shortage of enthusiastic

<sup>17</sup> Susan Sontag. “Regarding the Pain of Others.” The New York Times, March 23, 2003. <https://www.nytimes.com/2003/03/23/books/chapters/regarding-the-pain-of-others.html>.

<sup>18</sup> Furstenau, Marc. “The Ethics of Seeing: Susan Sontag and Visual Culture Studies.” *Postscript* 26, no. 2 (Winter, 2007): 91-0\_3. <https://www.proquest.com/scholarly-journals/ethics-seeing-susan-sontag-visual-culture-studies/docview/232111418/se-2>.

<sup>19</sup> Edited by Moon-Kie Jung, João H. Costa Vargas, “Anti Blackness,” (Duke University Press, April 2021), p 41.

<sup>20</sup> *Ibid.*, p 42.

<sup>21</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death,” p 15

<sup>22</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death.” (Illinois: University of Illinois Press, 2015), p 3.

enthusiastic spectators interested in reproducing the same violence they looked upon. Slaves were repeatedly featured within paintings, woodcuts, and lithographs and were both positioned and rendered in a violating fashion. With chains tied to the hands and feet of the enslaved, iron collars buckled to their necks, and on their knees begging for their freedoms Black pain quickly became not only the leading profit-maker for western society but also the most engaging form of entertainment for onlookers.<sup>23</sup> A war between white depravity and Black vulnerability had been waged by white racists, as the imagery of Black woundedness reinforced the notion that the enslaved were subordinate, powerless victims not just devoid of humanity but deserving of their status. And with this war arrived the notion of sentimentalism, a term that can only be defined by its emphasis on a culture of sensibility.<sup>24</sup> As described by Courtney Baker, “this morality of pain and cruelty neither automatically nor necessarily bolstered the belief that Black bodies experienced pain as ‘civilized’ and implicitly white bodies did. The witnessing of another’s suffering was by turns perceived as crucial to the elicitation of proper moral feeling on the one hand and as a reprehensible indulgence in cruelty on the other.”<sup>25</sup> Sentimentalism fashioned the Black body into a site of ethical conflict as the notion was not only manipulated by proslavery advocates but also subsequently utilized in order to prove the inferiority of the enslaved. By deeming Black people to be inferior—primal even—sensationalism exacerbated the painful conditions onlookers subjected Black bodies to by maintaining the stance that the enslaved Black body response to pain was undeveloped and uncivilized. As stated by Courtney Baker, “Pain isn’t really pain for the enslaved, because of their limited sentience.... The slave is happy and, in fact, his happiness exceeds our own.”<sup>26</sup>

However, some abolitionists utilized the visual power of the injured Black body to lay a solid foundation for enacting social change. Abolitionists advertised wounded Black bodies in order to reveal the true depravity and insidiousness of slavery. The sight of Black suffering was proven to be more powerful than anyone’s word,

as if without these visuals the horrors of slavery could not be actualized for onlookers. In mobilizing imagery of wounded Black bodies, abolitionists quickly proved themselves correct, as “the wounded body of the enslaved was a key image in the fight to end slavery.”<sup>27</sup> Only then could white spectators believe that pain and suffering ruined our past and could deform humanity’s potential.<sup>28</sup> This assertion of Black humanity by both the enslaved and white abolitionists subsequently became a radical ideological intervention through which a small but willing portion of educated whites had to grapple with the moral implications of the white gaze. Although it is easy for one to look at suffering and see nothing of note, this ideological intervention maintained another more favorable route to be taken — one in which the white gaze is enough to instruct spectators to react as those who value human life should.<sup>29</sup> It became a question of if the Black body was truly as wounded as abolitionists vehemently stated, how could whiteness be capable of deforming humanity to such an extreme? The sensationalism of Black suffering stands in direct correlation with the institution of slavery and while this reality is unsurprising, it is this very institution that continues to undermine the concept of Black humanity leading many to have little to no care for the well being and survival of the Black identity.

As we begin to move forward in history, with the abolition of slavery codified in the Emancipation Proclamation of 1863 and later ratified by the US Constitution’s Thirteenth Amendment in 1865, lynching quickly became the nation’s most sensationalized threat against the Black body, second to capital punishment.<sup>30</sup> The lynching epidemic that swept the United States introduced a particularly insidious utilization of looking and aesthetics to the public sphere, placing Black victims at the center for all to see.<sup>31</sup> These violent public acts were our earliest understandings of racial terrorism and they were not just limited to hanging Black men and women from trees but also involved other methods of torture such as mutilation, decapitation and desecration. For those unable to attend, or not lucky enough to obtain clothing or body

<sup>23</sup> Ibid., p 24 -25.

<sup>24</sup> Ibid., p 24.

<sup>25</sup> Ibid., p 25-26

<sup>26</sup> Ibid., p 27.

<sup>27</sup> Ibid., p 28.

<sup>28</sup> Ibid., p 28.

<sup>29</sup> Ibid., p 2.

<sup>30</sup> Ibid., p 36.

<sup>31</sup> Raiford, Leigh. “Photography and the Practices of Critical Black Memory.” *History and Theory* 48, no. 4 (2009): p 115.

parts, photographs of the scene were the next best thing. These public spectacles quickly transformed the Black body into not only a fundamentally visible body but also a visual souvenir for white people to continually relish.<sup>32</sup> “If lynchings helped construct a unified white identity among those whites present and in the surrounding areas, then photographs of lynchings helped extend that community far beyond the town, the country, the state, the South... Now all whites, rich or poor, male or female, northern or southern, could imagine themselves to be master.”<sup>33</sup> The spectacle of lynchings thoroughly complicated humanity’s interactions with the politics of violent imagery as such persistent reproductions of lynchings by way of visual imagery prompted a powerful yet troubling archive of Black visuals that inextricably altered the ways in which we are able, allowed, and made to see Blackness, “and the value we attach to Black life because of this sight.”<sup>34</sup> In sum, as the traditional framework of suffering in visual culture shifted itself from a broader understanding of pain and cruelty to a more specified lens on the ritual and performance of white dominance in relation to Black submission- pain was no longer independent from the throes of white supremacy.<sup>35</sup>

The display of not only a wounded but broken, often burned and decapitated Black body quickly became the face of racial subjugation. The extremity of Black suffering became marketable to white communities as many viewed the violent act as a family outing and for those who were unable to attend, photos of lynchings were widely circulated as souvenir postcards.<sup>36</sup> “The gap of space and time that separates [the] white mother [who received the card] and son [who sent it] will be sutured over the dead body of an African American man; sentimental white familial bond will be reinforced through Black

death.”<sup>37</sup> The growing ecology of lynching imagery, in which they were marketed, sold and profited from essentially became an act of non-intervention as visuals granted viewers distance from such evident suffering and violence. The medium of photography was essentially pornographic— a paralyzingly gruesome spectacle— that was frankly too repulsive and far too often circulated to elicit any emotion or action. And it is through the disturbing photograph of the 1930 Marion Lynching that we confront the paradigm through which all other lynching photographs are also viewed through— the collective gaze of white supremacy. Horror was transformed into a routine, highlighting not only the inevitable moral corruption that works in collaboration with white supremacy but also the full exploitation of Black victims that became seen as a common occurrence.<sup>38</sup> In this photograph, we are confronted with the mutilation and public lynching of Thomas Shipp and Abraham S. Smith, whose haunting presences are captured in their grotesque hanging from a maple tree in the town square of Marion, Indiana. On August 7, the teenagers, including another boy by the name of James Cameron, were held in the Marion jail for the accused murder of Claude Deeter and rape of Mary Ball. Before the three could stand trial, a mob of white residents broke into the jail hanging all three from a tree on the courthouse lawn.<sup>39</sup> Despite this, miraculously, with the rope already around his neck, Cameron survived and was later sentenced to five years in prison as an accessory to the murder of Claude Deeter.<sup>40</sup> The bodies of Shipp and Smith are the main focus of the image, but only to the extent that their death solidifies the presence of another, arguably greater, evil. This image is one of the most notorious lynching photographs in American history as copies were later sold by local photographer Lawrence Beitler to eager

<sup>32</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death,” p 64.

<sup>33</sup> Raiford, Leigh. “Photography and the Practices of Critical Black Memory.” *History and Theory* 48, no. 4 (2009): p 115.

<sup>34</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death,” p 118.

<sup>35</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death,” p 37.

<sup>36</sup> “History of Lynching in America.” NAACP, last modified 2022, <https://naacp.org/find-resources/history-explained/history-lynching-america>.

<sup>37</sup> Baker, Courtney R. “Humane Insight: Looking at Images of African American Suffering and Death,” p 38

<sup>38</sup> *Ibid.*, p 21.

<sup>39</sup> Poletika, Nicole. (2018, May 15) “Strange Fruit: The 1930 Marion Lynching and the Woman Who Tried to Prevent It.” *Indiana History Blog*. <https://blog.history.in.gov/strange-fruit-the-1930-marion-lynching-and-the-woman-who-tried-to-prevent-it/>.

<sup>40</sup> Kaplan, Fran. “Dr. Cameron: Museum Founder and Lynching Survivor. Survivor.” *America’s Black Holocaust Museum*. <https://www.abhmuseum.org/about/dr-cameron-founder-lynching-survivor/>.

white community members for just fifty cents each.<sup>41</sup> Moreover, I wish to add that the gesture of including such a graphic depiction of The Marion Lynching grants us an analysis of pain that reflects more broadly on how lynching photographs have shaped popular consciousness, in part, because of the image's iconographic qualities. This photograph, like many images of the Black body in pain and death, has assumed the complex task of making pain legible whilst rendering the past into symbolic form. My decision to include this image, among several others, is not without disregard for the significance of the mental and emotional trauma victims have suffered and also is not without regard for the intimacy one deserves to be granted in pain and in death. However, this inclusionary visual process allows room for meaningful engagement with the ontology of Black pain. Lynching photography has long been crucial to the formation of Black historical memories of woundedness and socio-political and through this process of re-contextualization, I argue, that these visual encounters make it possible for readers to have a productive interrogation on anti-Blackness and humanity's struggle for sanctity.

In looking further at the haunting presence of J. Thomas Shipp and Abraham S. Smith, the two young Black boys who were murdered on a summer night in Marion, Indiana in 1930, they are still and no longer threatening. Despite the sharp image quality, we are still unable to see the faces of the men, or even identify them due to their bloodied faces. But, the photograph's composition suggests that they were meant to remain in the foreground, devoid of a recognizable identity, as mere vessels that confirm the inevitability of white supremacy.<sup>42</sup> However, it is crucial to note that our interpretations are reliant on all pictured subjects and more often than not veer away from the visual of a brutalized Black body and towards the swath of audience members. White onlookers occupied a space of dis-identification, a term that contextualizes the act of veering away from the subject of trauma. Within the context of lynching we are confronted with an onslaught

of white spectators whose gestures of looking away from a lynched body in their foreground imply an innate refusal and embarrassment with this particular event of Black victimization.<sup>43</sup> We are instantly greeted with the faces of white spectators who revel in both their spectatorship and subsequent visual proof of their involvement. A group of white people smile and point as their delight is exemplified by the two hanging Black corpses behind them. What are we to make of this? This visual? These people? Above all, this image acts as a consolidation of whiteness and its proximity to depravity and terror—allowing an image of the white identity to emerge from an unkind spectacle of destruction,

In continuing our investigation of Black suffering in visual culture it becomes clear that these visuals are deserving of their place on a continuum of terror. As we continue to grapple with the power dynamics evident in these acts of racial terrorism that continue to be reinforced by memory, technology and the body in fear we stumble upon the public spectacle of Emmett Till. In August 1955, fourteen year old Emmett Louis Till was visiting relatives in Money, Mississippi during his summer vacation. And while details of this case continue to be contested even in our contemporary moment, at the time it was thought that Till had sustained an inappropriate interaction with Carolyn Bryant, a twenty-one year old shopkeeper. Just three days later on August 28, Bryant's husband, Roy Bryant; brother in law, J.W. Milam; and, according to several witness testimonies, by two others, including perhaps even Carolyn Bryant herself, drove to the home of Till's great uncle Moses Wright and kidnapped Emmett Till at just around 2:30 am.<sup>44</sup> Roy Bryant and J.W. Milam then went on to beat Till to death, shooting him in the head before tying a large metal fan to his neck with barbed wire and throwing his body into the Tallahatchie River. His body was soon recovered, on August 31, 1955 and he was so disfigured his body could only be identified by a signet ring that bore the initial "L.T." in reference to Louis Till, Emmett's estranged father.<sup>45</sup> Great efforts were subsequently taken by police officials

<sup>41</sup> Poletika, Nicole. (2018, May 15) "Strange Fruit: The 1930 Marion Lynching and the Woman Who Tried to Prevent It." Indiana 41 History Blog. <https://blog.history.in.gov/strange-fruit-the-1930-marion-lynching-and-the-woman-who-tried-to-prevent-it/>.

<sup>42</sup> Raiford, Leigh. "Photography and the Practices of Critical Black Memory." *History and Theory* 48, no. 4 (2009): p 116.

<sup>43</sup> *Ibid.*, p 63.

<sup>44</sup> "Emmett Till." FBI. <https://www.fbi.gov/history/famous-cases/emmett-till..>

<sup>45</sup> Baker, Courtney R. "Humane Insight: Looking at Images of African American Suffering and Death," p 71.

to ensure that Till's mutilated body would never be seen; however, Till's mother- Mamie Till demanded her son's body not only to be returned to his home in Chicago but also for his tightly sealed coffin to be opened against police orders. "The revelation of Emmett Till's brutal murder and his horribly disfigured corpse drew a striking ideological line between those who refused to recognize Black life and victimization and those who recognized the violated humanity and unwarranted suffering that begat Till's death and their own haunted Black lives."<sup>46</sup> Mamie Till's desire to see and recognize her son's body was a fraught necessity, but in this process of identification, she was forced to reckon with the reality that her son was no longer a recognizable human being and now another undeserving Black victim mutilated by the gaze of white supremacy.



*Jet Magazine. The Emmett Till Project, 1955.*

It took fewer than four weeks for the case to go to trial. Roy Bryant and J.W. Milam were accused of the murder, and were each subsequently acquitted of all charges by an all white, all male jury. No one else was ever indicted or prosecuted for involvement in the kidnapping or murder. Bryant and Milam, though, later confessed to their crime on January 24, 1956 to *Look* magazine within an article entitled "The Shocking Story of Approved Killing in Mississippi." Both men are now long deceased, but it is

<sup>46</sup> Baker, Courtney R. "Humane Insight: Looking at Images of African American Suffering and Death," p 69.

crucial to draw attention to the political spectacle of Till's open casket public funeral. Mamie Till's decision in making her son's funeral open for public viewing was wholly intentional. She understood foremost the power of sight and just how irrefutable the act of viewing mutilation would be on the human spirit. Her belief was that in seeing her son's body, the public would be forced to confront themselves and the terror we have allowed the Black body to live with.<sup>47</sup> The spectacle of Till's deformed body in the casket showed not only his body but the visual display of a death no one admittedly wishes to encounter. The visibility of Till's woundedness was evidence of a universal human vulnerability not even whiteness is capable of escaping and for many that reality was fraught.<sup>48</sup>

In highlighting the cultural importance of the Black tradition of reclaiming one's kin, Mamie Till's radical reclamation of her son's body for public viewing created an additional perspective to our ongoing conversation of Black spectularity. Contrary to our belief that death is the end-all-be-all for the human condition, Black suffering does not end in death, as "[white violence] was often as disrespectful to Black bodies in death as they were in life."<sup>49</sup> And in understanding this, Mamie Till's refusal to retouch her son's disfigured body introduces us to a new form of aesthetic politicization, one in which mutilated realism becomes the forefront of her activism. It is here that the grieving process, a mechanism notably compounded by humanity's fraught understanding of empathy, is met with the visual.<sup>50</sup> It is with Till's mutilated body that we begin to grapple with the complex interaction between the spectacle of Black suffering and the lengths through which we choose to ignore the humanity of the individual being looked at. It is clear that without Mamie Till's intervention the image of Till's disfigured body would have died in the same secrecy that whiteness thrives within and it is within this intervention that a new critical question emerges urging us to grapple with what could occur to the condition of Blackness when met with dignified resistance.

As we begin to move beyond the safety of the gaze used to cultivate such a capacity for humane insight towards representations of Black suffering, the occurrence of such

<sup>47</sup> *Ibid.*, p 77.

<sup>48</sup> *Ibid.*, p 80.

<sup>49</sup> *Ibid.*, p 81.

<sup>50</sup> *Ibid.*, p 83.

bloodied spectacles rapidly multiplied with the emergence of The Civil Rights Movement. The 1960s Civil Rights Movement introduced an unprecedented surge of chaos into an already potent visual ecology of Black suffering. However, this period was characteristically different from previous understandings and conceptualizations of violence as this chapter of history was distinctly characterized by public acts of Black resistance against segregation. However, now, rather than questioning the suffering whiteness precipitates on the Black body we begin to shift towards questioning the woundedness of the Black body when deliberately at arms. It is here that we begin to simultaneously account for the aesthetics of Black embodiment in the face of violence and political demand, as our visual field has shifted towards a battlefield.

Visuals depicting the abuse of lunch-counter integrationists, mixed-race travelers, and peaceful Black marchers widely circulated in both public and in print. And in contrast to the aestheticism of Emmett Till, this was no longer a period of passive nonviolent political action, Black protestors and their subsequent allies were no longer passive. “Nonviolent direct action seeks to create such a crisis and foster such a tension that a community which has constantly refused to negotiate is forced to confront the issue. It seeks to dramatize the issue that it can no longer be ignored.”<sup>51</sup> The planned resistance of the Civil Rights Era predicated itself on a frankly new and immeasurable mass visualization of news events in real time, providing a clear example of how viral and riveting the spectacle of black subjugation was for a viewing public. In fact, there was enough awareness among Black activists to correctly assume that the white violence that often quickly followed non-violent acts would serve to promote the cause for civil rights and simultaneously address the need for greater visibility. However, in order to make these sacrifices effective on a national scale, brutality had to be caught on camera and marketed as such. “The images of the Civil Rights Movement illustrate a black-authored narrative of self-determination and autonomy” that “confounded the conventional mainstream narrative of blackness in America.”<sup>52</sup>

It is here that we begin to see a shift towards

contemporary technologies as the systematization of cameras and print technology rapidly closes the disconnect between the public and racialized violence in the process of unfolding. “What looking at the images alongside an imagined community of fellow onlookers offers to the world is an identification of what constitutes the unacceptable treatment of a human being, starting with an identification of the unacceptable treatment of this human being depicted here.”<sup>53</sup> At the crux of the Civil Rights Movement’s engagement with visual culture was the latent hope that images depicting the suffering of others are in fact capable enough of provoking outrage by inspiring the very language and values of human rights that spectators can attest to seeing being violated. And as the nature and techniques of spectatorship and virality continue to change with the rapid twenty-first century emergence of digital landscapes and social networking, we are now confronted with an evolving technology that is capable of not only reiterating but essentially re-encoding our encounters with anti Blackness. In understanding this, it becomes clear that these brutal acts were not only a repeated violation against the physical but a vile manifestation of whiteness weaponized against the Black body—a demonstration that Blackness was worthless in the gaze of whiteness. And it is this way of seeing that allowed white communities to become emboldened in mutilating, lynching, at times eating, and otherwise killing Black people en masse.<sup>54</sup>

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## Closeted Country: Popular Understandings and Political Discourse of Queer History in the American West

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### Abstract

Gay cowboys, trans wagondrivers, and rural queer communities—while not pinnacles of the Wild West, their presence is far more ubiquitous than the mythic history of the region suggests. A new wave of scholarship, commonly denoted as “New Western” scholarship, has investigated the West as a queer space to unsettle distorted understandings of the American West. This paper undertakes an analysis of the discourse surrounding three depictions of queer Western history to evaluate how and to what extent these histories are being received in the national conversation. By dissecting newspaper articles, social media pages, and other forums of public discussion, this paper reveals that publics discretize Western history from its queerness, belittling the contributions of LGBTQ+ people to history. Queer Western history and progressive politics, however, are found to have a mutually beneficial relationship with each other, where developments in one lead to the promotion of the other. Taken together, the importance of understanding queer contributions to history as foundational to the West presents a pathway to protect queer people and enrich the political conversation.

### Introduction

In a 2015 *New York Times* exposé by museum critic Ed Rothstein titled “At the Buffalo Bill Museum, a Showdown Between History and Myth,” Rothstein puts his finger on a unique dynamic in the American West: that tourists and locals are constantly confronted with sifting out historical truth and myth about the region.<sup>1</sup> He notes that many museums in Cody, Wyoming, an iconic town described by Rothstein as true cowboy country, present historical truth alongside a “fair amount of distortion.”<sup>2</sup> The museums frequently highlight imagery that plays into the myth-making of the West, from the vilification of Native Americans to heroism of masculine cowboys, and from docile women working in homesteads to rugged buffalo hunters. When Ang Lee’s movie *Brokeback*

*Mountain* that follows the love story of two male cowboys in 1963 Wyoming hit American theaters and televisions, widespread shock at a different, queer view of the West dominated conversation. Queerness in the West, though is not new, as many scholars, historians, and even common queer people in the West can attest to. The fictionalized *Brokeback Mountain* is not the first time that the LGBTQ+ presence in the West has been shown either, begging the interesting question as to how queerness in the West is understood among the public.

The American West has long been mythologized and studied, and it holds a distinct role in the story of the United States. Here, the American West—with varying shorthands like “the West”—encapsulates a two-fold definition, both as the *historical* region of the North American continent that had yet to be settled by Europeans and the *contemporary* region of states that lay west of the 100th meridian west. Scholarship on the history of the American West traces its roots back to Frederick Jackson Turner’s ‘frontier thesis’ that presented American character and nation-building as defined by Westward expansion; his ideas served as ground zero for all scholarship on the West.<sup>3</sup> By the late 1980s, academic discourse on the West had begun to criticize Turnerian visions of Western history as resting on narrow, problematic notions regarding race, gender, and sexuality.<sup>4</sup>

<sup>1</sup> Edward Rothstein, “At the Buffalo Bill Museum, a Showdown Between History and Myth,” *The New York Times*, August 3, 2012, <https://www.nytimes.com/2012/08/04/arts/design/buffalo-bill-museum-in-wyoming.html>.

<sup>2</sup> Rothstein, “At the Buffalo Bill Museum, a Showdown Between History and Myth.”

<sup>3</sup> Karen Jones and John Wills, *American West: Competing Visions*, (Edinburgh University Press, 2009), 40.

<sup>4</sup> Kim Warren, “Gender, Race, Culture, and the Mythic American Frontier,” *Journal of Women’s History* 19, no. 1 (2007): 237; Jones and Wills, *American West: Competing Visions*, 55.

Led most principally by scholars like Patricia Nelson Limerick with her book *The Legacy of Conquest* and Richard White with his book *“It’s Your Misfortune and None of My Own”*: A New History of the American West, ‘New Western’ history, as it is so called, emerged as an approach to the region’s history that sees it as one defined by complexity, conquest, and ambiguity.<sup>5</sup> Out of New Western history, academic approaches to the West as a queer space proliferated.

Studies on queerness in the West actually date as far back as 1948, when Alfred Kinsey in his book *Sexual Behavior in the Human Male* found that the homosexual behavior was occurring most frequently in the rural parts of the United States, particularly the American West.<sup>6</sup> However, not until New Western scholarship caught on did queer studies of the West truly take off. Scholars of women, gender, and sexuality studies were among the first to complicate Old Western understandings of the West, uncovering that previous interpretations erased contributions of women and queer people. Works such as Albert Hurtado’s *Intimate Frontiers: Sex, Gender, and Culture in Old California and Quintard Taylor* and Shirley Ann Wilson Moore’s *African American Women Confront the West, 1600–2000* take a multicultural approach to the West and are among the most notable, arguing for the importance of understanding race, gender, and sexuality in the making of the Western Frontier.<sup>7</sup> Additional examples that build off of these earlier, foundational works include Peter Boag’s *Re-Dressing America’s Frontier Past* which examines the ubiquity of gender nonconforming people throughout the West’s history, and Rebecca Scolfield’s

*Outriders: Rodeo at the fringes of the American West* which analyzes how queer rodeo-ers used rodeo performance to claim space in the West and assert new definitions of masculinity.<sup>8</sup> Indigenous scholarship has also played a foundational role in documenting the presence of queerness out West, with scholars like Craig Womack and Lisa Tatonetti.<sup>9</sup>

Great attention has also been given to uncovering the ways that historically, the politics of the West have functioned to suppress queerness. Michael Park’s investigation into the emasculation of Asian American men immigrating primarily to the West reveals how xenophobic policies in the era of the 1850s-1940s served to form “queer enclaves” of Asian men and an overall feminized perception of Asian men.<sup>10</sup> Rebecca Scofield has analyzed how President Ronald Regan used an urban cowboy aesthetic to assert a “mythic authority” over the nation, benefitting from and perpetuating a view of the West where masculinity entails success and power. These are just two examples among many.<sup>11</sup>

Despite the impressive literature documenting queer history and countering long-standing perceptions of the West, there has yet to be substantial efforts to evaluate popular uptake of these histories and their impacts on political discourse of the American West. This paper represents the first effort to document the popular and political reception of queer Western history, answering the question: *how and to what extent have depictions of queer Western history infiltrated the public consciousness and LGBTQ+ politics of the American West?* To approach this question, I take on a comparative case study of three public-facing presentations of queer Western history: (1) the

<sup>5</sup> Natasha Mayne, “As Far as the Eye Could See: Cormac McCarthy, Myth, and Masculine Visions in the ‘New’ American West,” *Australasian Journal of American Studies* 20, no. 2 (2001).; Patricia Limerick, *The Legacy of Conquest: The Unbroken Past of the American West*, (New York: W W. Norton & Company, 1988); Richard White, *“It’s Your Misfortune and None of My Own”*: A New History of the American West, (Norman: University of Oklahoma Press, 1991).

<sup>6</sup> Alfred Kinsey, *Sexual Behavior in the Human Male*, (Philadelphia :W. B. Saunders Co., 1948).

<sup>7</sup> Warren, “Gender, Race, Culture, and the Mythic American Frontier,” 240; Albert Hurtado, *Intimate Frontiers: Sex, Gender, and Culture in Old California*, (Albuquerque: University of New Mexico Press, 1999); Quintard Taylor and Shirley Ann Wilson Moore, *African American Women Confront the West, 1600–2000*. (Norman: University of Oklahoma Press, 2003).

<sup>8</sup> Peter Boag, *Re-Dressing America’s Frontier Past*, (University of California Press, 2011); Rebecca Scofield, *Outriders: Rodeo at the Fringes of the American West*, (University of Washington Press, 2019).

<sup>9</sup> Craig Womack, *Red on Red: Native American Literary Separatism*, (University of Minnesota Press, 1999); Lisa Tatonetti, *Teaching Western American Literature*, ed. Brady Harrison and Randi Lynn Tanglen (University of Nebraska Press, 2020).

<sup>10</sup> Michael Park, “Asian American Masculinity Eclipsed: A Legal and Historical Perspective of Emasculation Through U.S. Immigration Practices,” *The Modern American* 8, no. 1 (2013): 5-17.

<sup>11</sup> Scofield, Rebecca, “‘Chaps and Scowls’: Play, Violence, and the Post-1970s Urban Cowboy,” *The Journal of American Culture* 40, no. 4 (2017): 326.

‘Out West’ series by Gregory Hinton; (2) The International Gay Rodeo Association; and (3) the Charley Parkhurst story; and subsequently analyze how each are received and discussed, dissecting newspaper publications, social media platforms, magazines, and other forums of public discourse. It is important to note a couple key limitations in the uptake of these histories. First, these case studies mostly interact with audiences in the American West as they have more resonance in the region. Scholars have discussed how the history of the West and its mythology became a national narrative, so popular uptake of these histories outside of the West is also important. There has been some national discussion relating to all three cases, however. Additionally, I encountered many instances where cultures of homophobia meant some audiences refused to even entertain the idea of history that uplifts queer people. While this limits the audience of who is interacting with this history, it also becomes an interesting point of analysis.

In light of these limitations, I find that public understandings of queer Western history discretize queerness from the history of the West. What I identify as discretization means that publics understand queer contributions to history either as not foundational to the history of the West or as separate from their queer elements, highlighting a belittled understanding of LGBTQ+ contributions to history and an upholding of dominant, Turnerian-style myths. As it relates to how these depictions of history have influenced political discourse, I find evidence of a mutually-beneficial relationship between queer Western history and progressive politics. These histories are often invoked to support and propel the progressive agenda, and in the reverse, developments in the political landscape often lead to progressive policies, actors, and advancements promoting, validating, or uplifting queer history. These findings, derived from the three cases, have intellectually-stimulating and important implications for further realizing the logic of mythological understandings of the American West and the political conversation of LGBTQ+ issues.

### ‘Out West’ by Gregory Hinton

Growing up in rural Cody, Wyoming in the shadow of the Absaroka Mountain range, author and historian Gregory Hinton has always been intimately a part of Western lifestyle and the history of the American West. Upon coming out as gay while in college in Boulder, Colorado, Hinton faced immense homophobia in his

small hometown. Through his studies and experiences in the film industry, Hinton became keenly aware of the history of LGBTQ+ people in the West and drew upon his own experiences growing up gay to write novels about the queer experience in the West. In 2009, he kicked off his series ‘Out West’ with a move to display two shirts worn by actors in the movie *Brokeback Mountain* at the Autry Museum of the American West. From there, ‘Out West’ has evolved into a traveling national museum program that combines lectures, plays, exhibitions, and films that amplify queer history and culture in the American West.

The main installments of the series include programs titled “Beyond Brokeback,” “Hidden Histories,” and “Out West with Buffalo Bill,” which thoroughly explore a variety of queer figures, communities, and activity throughout the West’s history.<sup>12</sup> In his own words, Hinton comments on the importance of his work: “Now is the time... for displaced gays and lesbians from the West to come home.”<sup>13</sup> His series has been discussed in many newspaper journals, magazines, and social media platforms, ranging from some national publications like the Los Angeles Times to many local publications like Salt Lake Magazine and The Sheridan Press. Analysis of the discourse around ‘Out West’ reveals that Hinton presented shocking, unknown information, as press coverage around the event highlighted epiphanic reactions to learning about this history in communities. In asserting the belonging of queer people in Western history, however, his depictions of LGBTQ+ contributions to the West have not been uniformly accepted as a historical facet of the region. Some discussion situates the history presented in ‘Out West’ as just that—history, while others see it as a lifestyle brought to the West and more refuse to even entertain viewing the series. Politically, ‘Out West’ has been invoked in service of both pushing progressive politics forward and highlighting it as an outlier in a conservative climate.

In October 2011, a headline in the *Bozeman Daily Chronicle* read “Bozeman library hosting controversial play about ‘Brokeback Mountain.’” As a part of its travels,

<sup>12</sup> Gregory Hinton, “Out West,” at the Autry Museum of the American West, 2009-2022.

<sup>13</sup> Craig Womack, *Red on Red: Native American Literary Separatism*, (University of Minnesota Press, 1999); Lisa Tatonetti, *Teaching Western American Literature*, ed. Brady Harrison and Randi Lynn Tanglen (University of Nebraska Press, 2020).

Hinton's 'Out West' series was presenting a program titled "Beyond Brokeback" at the Bozeman Public Library. While many other communities in Montana denied hosting 'Out West,' Library Foundation Director Paula Beswick said that it was something that she would not envision herself saying no to, noting how important the community conversation was.<sup>14</sup> That conversation was indeed opened, with many discussing how shocking depictions of gay people in the West were to them, how it changed their views on marriage,<sup>15</sup> and how it even prompted a son to come out to his parents following the program.<sup>16</sup> This sort of epiphanic language around the history that Hinton presented was not only found in Bozeman and small rural communities but also in national publications. A contributor to the *Huffington Post* wrote, when discussing the first installation of 'Out West' at the Autry Museum of the American West, that he "witnessed The Autry making history in the trail-blazing style of America's boldest pioneers... by their trailblazing move, The Autry has branded the United States free to everyone."<sup>17</sup> Invoking the courageous imagery of pioneers of the West, this writer speaks to the novel history that 'Out West' presents. He highlights, too, that this sort of history can have profound impacts nationally.

While 'Out West' certainly elicited enthusiastic and positive reactions, its influence on public memory of the American West does not show a complete acceptance that the West has historically always had a queer presence. Hinton's motivations for curating this program were to highlight the history of LGBTQ+ people in the American West and, in agreement with most scholars of the American

West and, in agreement with most scholars of the American West, assert that queerness in the West has always existed.<sup>18</sup> Many venues that Hinton reached out to soliciting interest in hosting 'Out West' refused to even entertain the idea of queer history of the West. He found people ignoring him, claiming that the program would be vetoed by governing boards, and even mentioning that they would be fired for promoting the idea.<sup>19</sup> Other articles discussing Hinton's 'Out West' can be read without even understanding that the primary objective of the exhibit is to present the queer *history* of the West. For example, *The Sheridan Press* describes the program as "an ongoing documentation and celebration of lesbian, gay, bisexual, and transgender life in the American West" and labels Hinton as an "accidental historian" twice.<sup>20</sup> Additionally, it discusses the content presented in the program as "stories" and "anecdotes," not using the word "history" once. This language simultaneously delegitimizes Hinton as a historian but also communicates that 'Out West' is about celebrating an LGBTQ+ *lifestyle* in the American West.

Political discourse around the 'Out West' series also is pervasive in public dialogue, some of which comes from Hinton himself. Speaking on one of 'Out West's' many programs "Beyond Brokeback," Hinton describes the play as an oral history of the rural western gay experience, and situates it as similar to that of other oral histories like Dustin Lance Black's play '8' which tells the story of the 2010 Proposition 8 same-sex marriage trial in San Francisco.<sup>21</sup> Black's play depicts an important milestone in liberatory queer politics and has been used as historical evidence to advance pro-LGBTQ+ issues. Black has even said that he hopes one day he will see his play in "the trashcan," meaning that civil liberties for queer people should not need

<sup>14</sup> Rachel Hergett, "Bozeman library hosting controversial play about 'Brokeback Mountain,'" Bozeman Daily Chronicle, October 1, 2011,

[https://www.bozemandailychronicle.com/news/dailyfeatures/bozeman-library-hosting-controversial-play-about-brokeback-mountain/article\\_7ecb3d44-ebe3-11e0-80fd-001cc4c002e0.html](https://www.bozemandailychronicle.com/news/dailyfeatures/bozeman-library-hosting-controversial-play-about-brokeback-mountain/article_7ecb3d44-ebe3-11e0-80fd-001cc4c002e0.html)

<sup>15</sup> Hergett, "Bozeman library hosting controversial play about 'Brokeback Mountain.'"

<sup>16</sup> "Hinton brings stories of gay Westerners to small towns," *The Sheridan Press*, October 22, 2015, [https://www.thesheridanpress.com/news/local/hinton-brings-stories-of-gay-westerners-to-small-towns/article\\_2b951242-9af5-5369-ae62-327c5eef0324.html](https://www.thesheridanpress.com/news/local/hinton-brings-stories-of-gay-westerners-to-small-towns/article_2b951242-9af5-5369-ae62-327c5eef0324.html).

<sup>17</sup> Tom Gregory, "Brokeback Mountain Reclaims the American West," *HuffPost*, March 18, 2010, [https://www.huffpost.com/entry/embrokeback-mountainem-re\\_b\\_393662](https://www.huffpost.com/entry/embrokeback-mountainem-re_b_393662).

<sup>18</sup> Kathleen Roberts, "Collection about gay rodeos," *Albuquerque Journal*, August 2, 2013, <https://www.abqjournal.com/240235/collection-about-gay-rodeos.html>.

<sup>19</sup> "Hinton brings stories of gay Westerners to small towns."

<sup>20</sup> "Hinton brings stories of gay Westerners to small towns."

<sup>21</sup> Gregory Hinton, "VIEWPOINTS: Staging LGBT oral history: 'Laramie,' *Beyond Brokeback and 8*," *Windy City Times*, November 9, 2011, <https://www.windycitytimes.com/lgbt/VIEWPOINTS-Staging-LGBT-oral-history-Laramie-Beyond-Brokeback-and-8/34680.html>

evidence.<sup>22</sup> In discussing the power of oral histories, Hinton invokes Black's own words regarding "8", saying that "it's important that people know the arguments on both sides as this case makes its way to the Supreme Court."<sup>23</sup> In asserting likeness of the two plays' importance, Hinton emphasizes his historical work as necessary to informing queer politics.

Outside of Hinton, political discussion around 'Out West' has spoken of its contributions as both a push to advance progressive politics and as an outlier among increasingly conservative LGBTQ+ politics. For example, curator at the Buffalo Bill Center of the West Jeremy Johnston discussed in the *Los Angeles Times* his process for getting approval from the museum board to allow Hinton to do research for 'Out West' at the museum. While he himself was excited by the project, he associated Hinton's research with a progressive political agenda that would not sit well with the community, noting that "outsiders are always coming here with their ideas about water, gay rights and reintroducing wolves."<sup>24</sup> He does note, however, that Hinton's work was more palatable as Hinton is not an outsider but a Westerner from Cody himself. In tandem with seeing 'Out West' as advancing a progressive agenda, the program is highlighted as claiming space among widespread conservatism on LGBTQ+ issues. This is exemplified in a post from the popular progressive political blog *Down with Tyranny*. Blogger Howie Klein chose to highlight the exhibit in light of a 2009 vote in New York that decided against marriage equality. He posited that it "seemed timely to support the strides that have been made with the Autry's unprecedented programming— remarkable for a conservative institution, especially given what is transpiring in the political arena— and to point out the importance of engaging in such

<sup>22</sup> Ng, David, "Gay marriage rulings: Prop. 8 playwright Dustin Lance Black reflects," *Los Angeles Times*, <https://www.latimes.com/entertainment/arts/culture/la-et-cm-dustin-lance-black-prop-8-20130626-story.html>.

<sup>23</sup> Hinton, "VIEWPOINTS: Staging LGBT oral history: 'Laramie,' Beyond Brokeback and 8."

<sup>24</sup> Glionna, "Scholar reclaims hometown of Cody, Wyo., and gays' and lesbians' place in the West."

discussions."<sup>25</sup> The blog highlights the series as a way to console the backsliding of progressive political goals and to spur hope that ingrained conservatism can come around on LGBTQ+ issues, seen here in explicitly noting that the Autry Museum is a right-leaning institution.

### The International Gay Rodeo Association

Turning towards the International Gay Rodeo Association (IGRA), the history of gay rodeo paints a second story of the reception of queer history. Rodeo is a heavily imagined aspect of the American West, embodying the courage and bravery of Western individuals taming wild animals and celebrating the ruggedness of the West. The gay rodeo emerged to celebrate rodeo in a way that uplifted queer people. It has its beginnings in 1976 with the first taking the form of the National Reno Gay Rodeo in Nevada. In the years following, gay rodeos quickly began forming in many other Western states. These existing local gay rodeo organizations merged to create the IGRA in 1985 as a more permanent way to practice Western culture while fostering an inclusive space for all.

The history of gay rodeo is often communicated by the IGRA and its members themselves, however other public-facing venues have communicated this history as well, including the IGRA archives at the Autry Museum, scholar Rebecca Scofield's oral history project "Voices of Gay Rodeo," and Luke Gilford's photography composition *National Anthem*.<sup>26</sup> Similarly to 'Out West', discourse around the history of gay rodeo has entered public conversation in a variety of places, ranging from national publications to local publications and from Youtube to Twitter threads. Public interpretations of this history, however, belittle the contributions of queer people to rodeo. One manifestation of this is people understanding queer people in rodeo as recent instead of having always been present, conflating the founding of gay rodeo associations like the IGRA with the first moment queer people contributed to rodeo.

<sup>25</sup> Howie Klein, "What Ever Happened to Ennis Del Mar? The Contributions of Gays to the Olde American West," *Down with Tyranny*, December 5, 2019, <https://downwithtyranny.blogspot.com/2009/12/what-ever-happened-to-ennis-del-mar.html>.

<sup>26</sup> Rebecca Scofield, *Voices of Gay Rodeo*, <https://www.voicesofgayrodeo.com/>; Luke Gilford, *National Anthem: America's Queer Rodeo*, (Damiani, 2020).

Extending off of this finding, popular discourses have also depicted the IGRA as invasive to Western tradition. The history of gay rodeo has also been invoked in much political conversation. While the IGRA does not outwardly affiliate itself with political claims, the history is often used in discussion of progressive politics, keenly with the issue of marriage equality.

Authoring an article in *The Conversation*, scholar of gay rodeo Rebecca Scofield makes a point to note that “we know that queer people have always belonged in rural places and have always participated in rural traditions.”<sup>27</sup> Members of the IGRA are also acutely aware that their history and place in rodeo is as old as its creation, many making an effort to learn more about queer rodeo activity that existed before regional associations and the IGRA were even founded.<sup>28</sup> Among the public, the reality of this history is not discussed in the context of gay rodeo; in fact, discourse in public domains tend to generalize the recent timeframe of the IGRA’s existence to queer people in rodeo generally. For example, in a news article by *Al Dia*, the reporter notes that “a few decades before the debut of the colossal film [*Brokeback Mountain* of 2005], LGBTQ people were already riding bulls, roping heifers, and organizing queer rodeos,” when discussing the IGRA’s history.<sup>29</sup> By using general language of LGBTQ+ people here instead of specifying members of the IGRA throughout the article, queer people in rodeo in general are reduced to a post-1970s timeframe. This distorts the reality of the history. Similar to seeing queer rodeoers as new to rodeo, discussion around the IGRA has painted IGRA participants as threats to the West. Seen most potently in a YouTube comment on a PBS video about the gay rodeo, one user posted “All we want is gay marriages we swear. Now we have gay

rodeos.”<sup>30</sup> This comment takes on a threatening tone, seeing the IGRA as intrusive of rodeo. It also represents a lack of understanding that gay rodeoers’ contributions to rodeo date back long before the IGRA’s establishment, especially by the commenter situating gay rodeo as temporally after the contemporary marriage equality debate.

In terms of the political dimensions of IGRA discourse, it is important to note that the IGRA itself does not affiliate much with politics directly. Outside of putting on rodeo events, the organization mostly pursues charity work for the LGBTQ+ community, raising money for researching cures for HIV and other social and health needs of queer people.<sup>31</sup> Outside of these claims the IGRA itself only comments on politics in the most inconsequential of ways, such as an IGRA event in Colorado including a message of support from then-Colorado Governor John Hickenlooper (that makes no substantial political claims) in its event program or a rodeo in Texas including an advertisement for “Equality Vodka” which supports “advancing LGBTQ+ equality” in its program.<sup>32</sup> Some of the IGRA’s subsidiary gay rodeo associations have been known to sell equal marriage merchandise, however.<sup>33</sup>

Despite this, the IGRA’s history has been enlisted in supporting certain political debates, specifically the marriage question. For example, in a 2015 *Reuters* article, the IGRA was used anecdotally to uplift the progressive stance on the marriage equality debate in Arkansas. The article invokes the IGRA’s history in confronting homophobic politics in the West, while also quoting queer rodeoers themselves delivering provocative lines such as “we just want what’s

<sup>27</sup> Rebecca Scofield and Elyssa Ford, “How gay rodeos upend assumptions about life in rural America,” *Salon.com*, August 28, 2022,

[https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america\\_partner/](https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america_partner/)

<sup>28</sup> Patrick Terry, “Voices of Gay Rodeo,” October 21, 2017, <https://www.voicesofgayrodeo.com/interviews/terrypatrick>.

<sup>29</sup> Beatriz Garcia, “Queer Rodeo: Cowboys riding towards diversity,” *Al Dia*, October 16, 2020, <https://aldianews.com/en/culture/heritage-and-history/rural-diverse-america>.

[https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america\\_partner/](https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america_partner/)

<sup>30</sup> David Spicer, July 2022, Comment on PBS Voices, “How is the Gay Rodeo Different?” *Youtube*, February 24, 2022, <https://www.youtube.com/watch?v=n3e5zpW4PWl>.

<sup>31</sup> IGRA, “The Mission of IGRA,” 2015, <http://igra.com/mission.htm>.

<sup>32</sup> “Rocky Mountain Regional Rodeo 33,” *IGRA Archives*, Event Program, July 10, 2015, <http://gayrodeohistory.org/2015/ProgramCgra.htm>; “Texas Tradition Rodeo: 2015 TGRA Rodeo, Music Festival & Fair,” *IGRA Archives*, Event Program, May 1, 2013, <http://gayrodeohistory.org/2015/ProgramTgra.htm>.

<sup>33</sup> Ema O’Connor, “These Gorgeous Photos From A Gay Rodeo Will Trigger Your Inner Cowboy,” *Buzzfeed News*, May 20, 2015,



evidence.<sup>22</sup> In discussing the power of oral histories, Hinton invokes Black's own words regarding "8", saying that "it's important that people know the arguments on both sides as this case makes its way to the Supreme Court."<sup>23</sup> In asserting likeness of the two plays' importance, Hinton emphasizes his historical work as necessary to informing queer politics.

Outside of Hinton, political discussion around 'Out West' has spoken of its contributions as both a push to advance progressive politics and as an outlier among increasingly conservative LGBTQ+ politics. For example, curator at the Buffalo Bill Center of the West Jeremy Johnston discussed in the *Los Angeles Times* his process for getting approval from the museum board to allow Hinton to do research for 'Out West' at the museum. While he himself was excited by the project, he associated Hinton's research with a progressive political agenda that would not sit well with the community, noting that "outsiders are always coming here with their ideas about water, gay rights and reintroducing wolves."<sup>24</sup> He does note, however, that Hinton's work was more palatable as Hinton is not an outsider but a Westerner from Cody himself. In tandem with seeing 'Out West' as advancing a progressive agenda, the program is highlighted as claiming space among widespread conservatism on LGBTQ+ issues. This is exemplified in a post from the popular progressive political blog *Down with Tyranny*. Blogger Howie Klein chose to highlight the exhibit in light of a 2009 vote in New York that decided against marriage equality. He posited that it "seemed timely to support the strides that have been made with the Autry's unprecedented programming— remarkable for a conservative institution, especially given what is transpiring in the political arena— and to point out the importance of engaging in such

discussions."<sup>25</sup> The blog highlights the series as a way to console the backsliding of progressive political goals and to spur hope that ingrained conservatism can come around on LGBTQ+ issues, seen here in explicitly noting that the Autry Museum is a right-leaning institution.

### The International Gay Rodeo Association

Turning towards the International Gay Rodeo Association (IGRA), the history of gay rodeo paints a second story of the reception of queer history. Rodeo is a heavily imagined aspect of the American West, embodying the courage and bravery of Western individuals taming wild animals and celebrating the ruggedness of the West. The gay rodeo emerged to celebrate rodeo in a way that uplifted queer people. It has its beginnings in 1976 with the first taking the form of the National Reno Gay Rodeo in Nevada. In the years following, gay rodeos quickly began forming in many other Western states. These existing local gay rodeo organizations merged to create the IGRA in 1985 as a more permanent way to practice Western culture while fostering an inclusive space for all.

The history of gay rodeo is often communicated by the IGRA and its members themselves, however other public-facing venues have communicated this history as well, including the IGRA archives at the Autry Museum, scholar Rebecca Scofield's oral history project "Voices of Gay Rodeo," and Luke Gilford's photography composition *National Anthem*.<sup>26</sup> Similarly to 'Out West', discourse around the history of gay rodeo has entered public conversation in a variety of places, ranging from national publications to local publications and from Youtube to Twitter threads. Public interpretations of this history, however, belittle the contributions of queer people to rodeo. One manifestation of this is people understanding queer people in rodeo as recent instead of having always been present, conflating the founding of gay rodeo associations like the IGRA with the first moment queer people contributed to rodeo.

<sup>22</sup> Ng, David, "Gay marriage rulings: Prop. 8 playwright Dustin Lance Black reflects," *Los Angeles Times*, <https://www.latimes.com/entertainment/arts/culture/la-et-cm-dustin-lance-black-prop-8-20130626-story.html>.

<sup>23</sup> Hinton, "VIEWPOINTS: Staging LGBT oral history: 'Laramie,' Beyond Brokeback and 8."

<sup>24</sup> Glionna, "Scholar reclaims hometown of Cody, Wyo., and gays' and lesbians' place in the West."

<sup>25</sup> Howie Klein, "What Ever Happened to Ennis Del Mar? The Contributions of Gays to the Olde American West," *Down with Tyranny*, December 5, 2019, <https://downwithtyranny.blogspot.com/2009/12/what-ever-happened-to-ennis-del-mar.html>.

<sup>26</sup> Rebecca Scofield, *Voices of Gay Rodeo*, <https://www.voicesofgayrodeo.com/>; Luke Gilford, *National Anthem: America's Queer Rodeo*, (Damiani, 2020).

Extending off of this finding, popular discourses have also depicted the IGRA as invasive to Western tradition. The history of gay rodeo has also been invoked in much political conversation. While the IGRA does not outwardly affiliate itself with political claims, the history is often used in discussion of progressive politics, keenly with the issue of marriage equality.

Authoring an article in *The Conversation*, scholar of gay rodeo Rebecca Scofield makes a point to note that “we know that queer people have always belonged in rural places and have always participated in rural traditions.”<sup>27</sup> Members of the IGRA are also acutely aware that their history and place in rodeo is as old as its creation, many making an effort to learn more about queer rodeo activity that existed before regional associations and the IGRA were even founded.<sup>28</sup> Among the public, the reality of this history is not discussed in the context of gay rodeo; in fact, discourse in public domains tend to generalize the recent timeframe of the IGRA’s existence to queer people in rodeo generally. For example, in a news article by *Al Dia*, the reporter notes that “a few decades before the debut of the colossal film [*Brokeback Mountain* of 2005], LGBTQ people were already riding bulls, roping heifers, and organizing queer rodeos,” when discussing the IGRA’s history.<sup>29</sup> By using general language of LGBTQ+ people here instead of specifying members of the IGRA throughout the article, queer people in rodeo in general are reduced to a post-1970s timeframe. This distorts the reality of the history. Similar to seeing queer rodeoers as new to rodeo, discussion around the IGRA has painted IGRA participants as threats to the West. Seen most potently in a YouTube comment on a PBS video about the gay rodeo, one user posted “All we want is gay marriages we swear. Now we have gay

rodeos.”<sup>30</sup> This comment takes on a threatening tone, seeing the IGRA as intrusive of rodeo. It also represents a lack of understanding that gay rodeoers’ contributions to rodeo date back long before the IGRA’s establishment, especially by the commenter situating gay rodeo as temporally after the contemporary marriage equality debate.

In terms of the political dimensions of IGRA discourse, it is important to note that the IGRA itself does not affiliate much with politics directly. Outside of putting on rodeo events, the organization mostly pursues charity work for the LGBTQ+ community, raising money for researching cures for HIV and other social and health needs of queer people.<sup>31</sup> Outside of these claims the IGRA itself only comments on politics in the most inconsequential of ways, such as an IGRA event in Colorado including a message of support from then-Colorado Governor John Hickenlooper (that makes no substantial political claims) in its event program or a rodeo in Texas including an advertisement for “Equality Vodka” which supports “advancing LGBTQ+ equality” in its program.<sup>32</sup> Some of the IGRA’s subsidiary gay rodeo associations have been known to sell equal marriage merchandise, however.<sup>33</sup>

Despite this, the IGRA’s history has been enlisted in supporting certain political debates, specifically the marriage question. For example, in a 2015 *Reuters* article, the IGRA was used anecdotally to uplift the progressive stance on the marriage equality debate in Arkansas. The article invokes the IGRA’s history in confronting homophobic politics in the West, while also quoting queer rodeoers themselves delivering provocative lines such as “we just want what’s

<sup>27</sup> Rebecca Scofield and Elyssa Ford, “How gay rodeos upend assumptions about life in rural America,” *Salon.com*, August 28, 2022, [https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america\\_partner/](https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america_partner/)

<sup>28</sup> Patrick Terry, “Voices of Gay Rodeo,” October 21, 2017, <https://www.voicesofgayrodeo.com/interviews/terrypatrick>.

<sup>29</sup> Beatriz Garcia, “Queer Rodeo: Cowboys riding towards diversity,” *Al Dia*, October 16, 2020, <https://aldianews.com/en/culture/heritage-and-history/rural-diverse-america>.

<sup>30</sup> [https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america\\_partner/](https://www.salon.com/2022/08/28/how-gay-rodeos-upend-assumptions-about-life-in-rural-america_partner/)

<sup>30</sup> David Spicer, July 2022, Comment on PBS Voices, “How is the Gay Rodeo Different?” *Youtube*, February 24, 2022, <https://www.youtube.com/watch?v=n3e5zpW4PWI>.

<sup>31</sup> IGRA, “The Mission of IGRA,” 2015, <http://igra.com/mission.htm>.

<sup>32</sup> “Rocky Mountain Regional Rodeo 33,” *IGRA Archives*, Event Program, July 10, 2015, <http://gayrodeohistory.org/2015/ProgramCgra.htm>; “Texas Tradition Rodeo: 2015 TGRA Rodeo, Music Festival & Fair,” *IGRA Archives*, Event Program, May 1, 2013, <http://gayrodeohistory.org/2015/ProgramTgra.htm>.

<sup>33</sup> Ema O’Connor, “These Gorgeous Photos From A Gay Rodeo Will Trigger Your Inner Cowboy,” *Buzzfeed News*, May 20, 2015,

right”<sup>34</sup> The article highlights Arkansas as, at the time, the next battleground state in legalizing same-sex marriage. In both invoking the IGRA’s history in the state and using queer rodeoers for provocative lines, the article attempts to assert the importance of equal marriage within the state. Here, the IGRA becomes a tool for the political strategy of progressives. In addition to being used to advance progressive aims, the IGRA was also uplifted following the Obergefell decision in 2015 that ruled in favor of the right to marry for same-sex couples. In an article in the *Dallas Voice* advertising the upcoming 2018 World Gay Rodeo being held in Texas, it discusses how one of the features of that year’s rodeo was to be the display of the Panel 93 pride flag. Panel 93 was “flown over the Obama White House and was hanging outside the U.S. Supreme Court the day of the Obergefell marriage equality decision in 2015.”<sup>35</sup> Throughout the article, like most articles relating to the IGRA, discussion of the event is in the context of the gay rodeo’s history. The presentation of the Panel 93 flag being used as a feature for the event shows the relationship between the IGRA and the political scene, as the progressive advancement on marriage equality embodied in the flag is used to build popularity for the event and celebrate the IGRA’s history.

### The Charley Parkhurst Story

The final case study surrounds one of the most iconic queer figures of the West: Charley Parkhurst. From the 1850s to the 1870s, One-Eyed Charley Parkhurst held a place in the company of Old West legends such as Buffalo Bill Cody and Wild Bill Hickock as a fearless California stagecoach driver.<sup>36</sup> Stagecoach driving was a career for the rugged and daring,

as driving gold, people, and mail across the West meant contending with harsh conditions, robbery, and physical exertion. Upon his death in late 1879, doctors discovered that Parkhurst was of the female sex. People who frequented Parkhurst in California were so unsuspecting that many refused to believe this was the case until the doctors who had made the initial discovery noted that at some point in Parkhurst’s life, he had given birth.<sup>37</sup> The shock value of this story has carried Parkhurst to be one of the most discussed queer icons of the American West, as his story complicates the masculine, cisgender, and heterosexual assumptions of Western history and life.

Written, historical material on Parkhurst is limited and on the whole unsatisfying, yet depictions of the Parkhurst story have proliferated nonetheless, largely defined by small biographies, fictionalized books of Parkhurst that loosely track historical events, and a few monuments in his honor. The history of Parkhurst has been discussed in the greater public conversation somewhat extensively, with discussion of this history finding its way into popular, national news publications, local news sources, and many social media accounts. Despite the impressive extent of discussion of Parkhurst’s history, public understandings of Parkhurst that emerge from analyzing these sources show a persistence in upholding mythologized versions of Western history as hyper-masculinized, cisgendered, and heteronormative. Parkhurst’s history is not being understood as a trans story and is perpetuating the Turnerian myth that men are made on the Western frontier. As it relates to how the Parkhurst story has made an impact on the politics of the West, this history is also being used to advance a progressive political agenda, particularly as it relates to education.

When author of *The Whip*— a novel of historical fiction based on the life of Charley Parkhurst— Karen Kondazian was asked if Parkhurst would have identified as a transgender man, she determinedly replies, “Yes, absolutely.”<sup>38</sup> Other depictions of Parkhurst similarly affirm his transness, with “The Fearless Character of One Eyed Charley” biography on *OutHistory.org*, being

<sup>34</sup> Steve Barnes, “Gay rodeo tests tolerance in Arkansas, hotbed of rights fight,” *Reuters*, May 20, 2015, <https://www.reuters.com/article/us-usa-gayrodeo/gay-rodeo-tests-tolerance-in-arkansas-hotbed-of-rights-fight-idUSKBN0051KJ20150520>.

<sup>35</sup> David Taffet, “For the love of rodeo: Competitors from around the world coming to Mesquite for World Gay Rodeo Finals,” *Dallas Voice*, October 19, 2018, <https://dallasvoice.com/for-the-love-of-rodeo/>.

<sup>36</sup> Bryan Kennedy, “The Fearless Character of One Eyed Charlie,” *OutHistory*, <https://outhistory.org/exhibits/show/tgibios/charley-parkhurst>; Boag, *Re-Dressing America’s Frontier Past*, 106.

<sup>37</sup> Boag, *Re-Dressing America’s Frontier Past*, 106.

<sup>38</sup> Nick Pachelli, “Was Legendary Stagecoach Driver Charlie Parkhurst Gay or Trans?” *The Advocate*, March 8, 2013, <https://www.advocate.com/arts-entertainment/books/2013/03/08/was-legendary-stagecoach-driver-charlie-parkhurst-gay-or-trans>.

featured as part of a trans biography project titled “Challenging Gender Boundaries”. Despite depictions of Parkhurst asserting this history as a piece of trans Western history, there is a divergence in public understandings of whether or not Parkhurst is recognized as transgender. Venues of public discourse that have an LGBTQ+ orientation, such as queer organizations, newspapers, magazines, etc., frequently deem Parkhurst as having a transgender identity while most other venues do not. For example, *Seattle’s LGBTQIA+ News and Entertainment Weekly* in a piece highlighting Parkhurst’s history presents his death in the following way:

“Charley died at the age of 67 after a battle with tongue cancer. It wasn’t until after his death that his friends realized Charley had been Transgender. Still, they used he/him pronouns when memorializing Charley, as did his obituary, which was republished by the New York Times.”<sup>39</sup>

Here, there is specificity in highlighting the queer identity that Parkhurst embodied. This is contrasted against language like that of a *Sparks Tribune* article, a local newspaper in Sparks, Nevada near where Parkhurst would have driven his stagecoach:

“Charlie Parkhurst died in December, 1879 at the age of 67, from throat cancer and rheumatism. When neighbors came to her cabin to lay the body out for burial, they discovered the renowned stagecoach driver was actually a woman.”<sup>40</sup>

This example reflects an understanding of Parkhurst as someone who was not queer but instead had always been a cisgender woman. This article, in the company of many others, purports an understanding of Parkhurst as wearing a disguise to hide his womanhood instead of one that challenges the gender binary. While the Parkhurst history is broadly discussed, this divergence in whether Parkhurst is understood as transgender or not highlights that the collective memory does not wholly attribute queerness to Parkhurst and his contributions to the American West.

<sup>39</sup> Lindsey Anderson, “The Trans history lesson your teachers never taught you,” *SGN*, November 18, 2022, <https://www.sgn.org/story.php?320706>.

<sup>40</sup> Dennis Cassinelli, “The Remarkable Story of Charlie Parkhurst,” *Sparks Tribune*, August 19, 2017, <https://sparkstrib.com/2017/08/19/the-remarkable-story-of-charlie-parkhurst/>.

In a similar vein, public discussion of Parkhurst’s history does not only deny Parkhurst’s transgender identity, but also replicates the antiquated, Turnerian, Western mythology that men are made in the West. A *Valley News* article, for example, notes that the public imagination clung to Parkhurst not only because “she had fooled the world into thinking she was a man, but because she became a man among men.”<sup>41</sup> The messaging here is in line with Turner’s problematic ideas of the frontier, where the frontier is a place where men are made. While Parkhurst troubles the Western myth in not being a docile woman nor a cisgender male, his story does not truly erode this mythology. Instead, he is asserted as a unique case where a “woman” could be recognized as a “man” through rugged Western activities. Similar messaging in more discreet terms can be found in a 2018 *New York Times* article, which invokes a 1969 *New York Times* article that reads “the state lines of CA in the post-Gold Rush period were certainly no place for a lady, and nobody ever accused Charley of being one.”<sup>42</sup> In using this messaging to communicate Parkhurst’s history, it perpetuates the idea that Parkhurst was seen as a man because of his ability to surmount the obstacles of the West, something that non-cisgender men could not do. The Parkhurst biography on *OutHistory.org* counters this invocation of Parkhurst, concluding by noting “regardless of his gender expression, Charley is, in every sense, a true Old West Legend.”<sup>43</sup> This claims that success and legendary status in the American West should not be attained via masculinization. Despite attempts to depict the Parkhurst history in this way, public understandings of Parkhurst display anti-queer and problematic Western mythologies that have been historically dominant.

Politically, the Parkhurst history has confronted political debate across many issue areas, with one example here being education. In a long battle between

<sup>41</sup> Matt Hongoltz-Hetling, “How a Girl From Sharon Became an Icon Out West,” *Valley News*, May 13, 2016, <https://www.vnews.com/Charley-Parkhurst-from-the-Upper-Valley-to-the-Old-West-1806268>.

<sup>42</sup> Tim Arango, “Overlooked No More: Charley Parkhurst, Gold Rush Legend With a Hidden Identity,” *The New York Times*, December 5, 2018, <https://www.nytimes.com/2018/12/05/obituaries/charley-parkhurst-overlooked.html>.

<sup>43</sup> Kennedy, “The Fearless Character of One Eyed Charlie.”

progressive and conservative lawmakers in California, the FAIR Education Act was passed in 2011, requiring that public schools teach fair, accurate, inclusive, and respectful (FAIR) representations of marginalized racial, ethnic, and LGBTQ+ histories in grade school social studies and history curricula. Professor of Women's and Gender Studies at Sonoma State University Dom Romesburg who was a part of an advisory group called the FAIR Education Implementation Coalition, invokes Parkhurst's life as a reason for why policy like the FAIR Education Act is so important:

"It's important that we see LGBT lives in the past so that we understand that queerness and transness is not something that simply appears after Stonewall, for example. But it's something that's been around in some form everywhere for always."<sup>44</sup>

Additionally, discourse around the Parkhurst history's relevance to this political debate addresses the issue of understanding this history as a transgender story. The FAIR Education Implementation Coalition, recommended that histories like Parkhurst use precise language for queer history. They highlight the importance of Parkhurst being referred to as he and not she and of using the word transgender, as the word "transgender" is a rare site in history textbooks.<sup>45</sup> In doing so, the Committee reconciles the diverging understandings of Parkhurst as a transgender versus a cisgender person wearing men's clothes, noting that some people in history would likely have lived a more gender-diverse life if not for the confines that society asserts on the basis of gender.<sup>46</sup>

<sup>44</sup> Jessica Placzek, "Meet Charley Parkhurst: the Gold Rush's Fearless, Gender Nonconforming Stagecoach Driver," KQED, April 25, 2019, <https://www.kqed.org/news/11742467/meet-charley-parkhurst-the-gold-rushs-fearless-gender-nonconforming-stagecoach-driver>.

<sup>45</sup> Katy Steinmetz, "California Is Adopting LGBT-Inclusive History Textbooks. It's the Latest Chapter in a Centuries-Long Fight," Time, November 14, 2017, <https://time.com/5022698/california-history-lgbt-textbooks-curriculum/>.

<sup>46</sup> Steinmetz, "California Is Adopting LGBT-Inclusive History Textbooks. It's the Latest Chapter in a Centuries-Long Fight."

## Synthesis and Conclusion

Taken together, these three case studies represent two primary influences that depictions of queer Western history have on public consciousness of the West and its political landscape: (1) discretization of queerness from Western history and (2) a mutually beneficial relationship between queer Western history and progressive politics. Discretizing queerness from Western history here materializes as the history from each case study is accepted as history insofar as it is placed on a recent timeline with regard to Western history or its queerness has been stripped from it. Relating to the first case study of Hinton's 'Out West' program, there was great discrepancy among the public conversation of how the history that the exhibit presented was being digested. Some spoke of 'Out West' as indeed highlighting LGBTQ+ history, while others understood 'Out West' as a comment on present queer lifestyle in the West, and more refused to entertain the idea of the program. While not absolute, these alternative understandings of 'Out West' represent upholding a version of Western history with no queer presence, perpetuating problematic Western mythologies. Public understandings of the history of gay rodeo presented a similar theme, seeing queer people as entering rodeo at the founding of the IGRA. While scholars, historians, and rodeoers themselves have communicated the existence of queer people in rodeo long before the organization's establishment, popular uptake of this history does not understand queerness in rodeo before the 1970s. Finally, with the Charley Parkhurst story, primarily venues of public discourse with LGBTQ+ orientations will identify Parkhurst as transgender, while others interpret Parkhurst as a woman in disguise. This rids Parkhurst's history of its queerness and situates Parkhurst within a gender binary.

While the literature on the American West highlights that queer erasure and an oversaturation of hypermasculinized, heteronormative, and cisgendered imagery and motifs of the West have served to uphold mythological understandings of Western history, the synthesis of these cases challenges simplistic remediation. As examples of filling in historical gaps and contesting dominant understandings of history, the presentation of queer history on its own does not wholly rewrite how publics remember the American West. This suggests that history may have a non-foundational role as the base of long-standing, Turnerian Western myths, but possibly rather social values and fictions.

What is clear are the possible implications of these understandings for queer people in the West. As seen with the IGRA, discretization of the queer history from that of the history of rodeo was paired with explicit, threatening language. Seeing queer people solely as contributors to the present and not to the past feeds into seeing queer people as invasive to the status quo, opening them up to violence.

In analyzing the ways in which these depictions of queer history have confronted political discourse, there exists a mutually beneficial relationship between queer Western history and progressive politics. All three of these depictions of queer Western history are used to advance progressive political agendas, however developments in politics also led the progressive side of political debate to validate and promote queer history. This is seen most viscerally with the Charley Parkhurst story, where the interplay between the history and the political push for the FAIR Education act present clear reciprocity. The Parkhurst story was used to support the importance and passage of the progressive FAIR Education Act, but the Act itself also affirmed and codified, in a way, this piece of queer history. An article by *KQED* public radio in Northern California put this succinctly, noting that Parkhurst's story has really only been told in "more obscure historical texts," but now will assume a more "permanent place in California history books."<sup>47</sup> Here, the issue of gaps in depictions of queer Western history was presented as a problem and political change was found as a solution, where in the other direction, in being used to advance the Act, progressives portray the lack of comprehensive education as an issue and the Parkhurst story is used to amplify its importance.

While more obscure in the other two cases, especially given that the nature of the FAIR Education Act was more outwardly supporting the telling of queer history, the mutually beneficial relationship still rears its head. With respect to the 'Out West' political discussion, Hinton himself positions his program as doing work to support rights for queer people, particularly related to marriage equality. Public interpretations of Hinton's work see the program as advancing a progressive agenda as well. As seen with Howie Klein's blog post, however, increasing conservatism in the LGBTQ+ political landscape directed

attention back to queer history. Klein himself noted the timeliness of the effort. Coming from a progressive blog, Klein's post embodies that as marriage politics evolved, the progressive agenda came back to uplift 'Out West,' even though the development constituted a swing to the right. Findings from the IGRA display the mutualism between the leftist political scene and the history of gay rodeo in the context of the marriage equality debate of the 2010s. In the example out of Arkansas, the history of the organization was used to support the progressive side of the marriage question in light of the increasingly contentious rights fight there. Following the Obergefell Supreme Court decision, politics turned back to positively benefit the IGRA, giving new importance to and spurring popularity for their events and history with the presentation of the Panel 93 flag.

As it stands, in both cowboy country and broader national discourse, queer history is not being received and understood as a facet of the American West's history. This mutualism between progressive politics and queer Western history, though, presents possible change. Should queer Western history be received in more complete ways, in ways that reject discretization and promote understanding of queerness having always been a part of the West, the progressive political conversation could be enriched, to the benefit of both erased histories and leftist values. For now, queer histories remain belittled in the public consciousness of the West.

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## How Can Children Learn Math Better?

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Math is an essential part of children's schooling, from preschool all the way to the end of high school. Early math learning (grades 3 to 5) centers around identifying/building/describing numerical and geometrical patterns, and looking for/applying relationships between varying quantities to make predictions (Kieran, 2004). A perfectly reasonable conclusion to reach is that the more exposure children get to such ideas by way of practice problems, the better children will be in math. While this may be true to some extent, solely practicing extra math problems will not necessarily make someone good at math. In fact, we all know the relatable feeling of being stuck in a math concept and, since attempting to solve more of something we find hard is frustrating, this may lead us to start to dislike math. From this we see that one's attitudes towards math are important to remain engaged and develop the necessary skills mathematical reasoning provides. One specific emotion towards math that past research has found to be telling of future math achievement is math anxiety, as its presence has been shown to decrease children's interest in the subject (Pantoja et al., 2020; Uscianowski et al., 2018).

Math anxiety is the stress and helplessness a person may feel when doing math. Pantoja et al. (2020) ran a longitudinal study, with children in first grade, where they measured two things throughout a two-year span: (1) children's number line estimation skills (e.g., if there is a 0-100 line, children would be asked to place a number  $n$  on the line, where  $0 < n < 100$ ), and (2) math anxiety using a Child Math Anxiety Questionnaire from Ramirez et al. (2016). They found that first graders' math anxiety was related to their math achievement in first grade through third grade, controlling for baseline knowledge (i.e., line estimation test). This finding suggests two things: (1) that math anxiety in children contributes to future math learning over and above an important foundational math skill such as line estimation, and (2) that this trend starts to develop as early as first grade. In this, Pantoja et al. (2020) showed that regardless of whether math anxiety stems from poor math skills, math anxiety leads to low math skills. With these results

we can reach a supported conclusion that educators must look past the physical act of doing math and also pay attention to children's attitudes towards math. A possible plan of action is to develop new curricula, starting in first grade classrooms, such that math appears to be fun and approachable rather than hard and intimidating. A possible way to do this is to encourage schools to allow some math-related play time instead of just handing kids worksheets (Seol et al., 2017). There are games out there, made specifically for educational purposes and not, that incorporate math skills and allow a friendly ease into math. Teachers can use such games that students may already be familiar with to explain concepts in class.

Nevertheless, teachers and other educators are not the only ones that have an effect on children's math anxiety. Outside of the classroom, parental attitudes towards math have been shown to influence children's own attitudes (Hildebrand et al., 2022). For example, parents' math anxiety at the beginning of the school year was highly correlated with their child's math anxiety at the end of the school year, but only if the parent frequently helped their child with their math homework (Maloney et al., 2015, as cited in Hildebrand et al., 2022). Thus, math anxiety is transmittable by socialization. This should come to no surprise because if the person that is supposed to help appears to be dreading the task, then they are more likely to get stressed out more easily and be less productive. In turn, a child does not want to aggravate their parent or even put themselves in such an uncomfortable situation. At this point, the child can just try to do their math homework alone and be better off. But what if the child also cannot do the math homework? Now, they do not have any help—which may lead to frustration itself—and so they have no choice but to go back to their parent and continue an anxiety-filled cycle.

We know kids are raised in a house ran by parents and learn about society as a whole through their parents. Therefore, parents holding harmful stereotypes can be detrimental to their children's academic self-efficacy. Related to math self-efficacy, data from implicit

association tasks reveal that both parents and their children have implicit associations between math and difficulty, but only parents significantly associated math with masculinity (Hildebrand et al., 2022). This data show that, on average, parents tend to have a gender-based stereotype about who is more suitable to pursue math. This is disappointing as parents may implicitly be discouraging their daughters from math and other math-related fields.

Hildebrand et al. (2022) discussed that parents who hold stronger explicit and implicit gender stereotypes (e.g., math is for men, literature is for women) are more likely to (1) explicitly endorse math as being more important for their sons, and (2) to think their sons have higher math aptitude than their daughters. This means that such parents are much more likely to believe their son is more capable of understanding a certain math concept than their daughter of comparable age and education. Clearly, this will lead to different treatment and even to increased math anxiety levels in their daughters. This only reinforces the stereotype cycle because these girls are likely to grow up to be women with higher math anxiety and lower confidence in their math abilities, and thus, hold stronger traditional explicit math-gender stereotypes. Simpkins et al., (2006) found that such negative attitudes towards math contribute to women discontinuing the pursuit of advanced math courses and activities as early as middle school, despite their math abilities being strong.

Furthermore, male-dominated fields are more likely to be considered fields in which success hinges upon “brilliance” (Bian et al., 2018), and evidence suggests that members of STEM fields believe that raw, innate talent is necessary for success in STEM (Leslie et al., 2015, as cited by Hildebrand et al., 2022). Analogous thinking is found among children as well. Bian et al. (2017) found that boys are more likely to select a task that requires them to be “smart,” while girls prefer tasks that require them to “work hard” (Hildebrand et al., 2022). This suggests that boys are more likely to prefer tasks that require an intellectual challenge because they believe they can innately do it, while girls tend to believe that they do not necessarily know how to do it but can work for such an achievement (though of course this is more work and a greater chance of quitting). Perhaps this reasoning stays with children throughout development and is the reason why STEM fields like math have such a big gender imbalance.

Taking it all together, to succeed in math, children need encouragement and non-anxious adults guiding

them through the learning process. Parents should also become aware of the biases they hold, as such beliefs may hurt their daughters. Of course, no parent that believes that their son has better mathematical aptitude is maliciously doing so to hurt their daughter. Regardless of the intentions, though, data show that such sexist and micro-aggressive comments and attitudes negatively affect girls’ confidence and performance in math-related activities. We can comfortably make a conjecture that if a teacher were to hold such attitudes as well, we would see a similar negative impact on female students (See Riegler-Crumb & Humphries, 2012). This is because, like parents, teachers act as students’ role models, and it is therefore likely that a comparable pattern would arise. Therefore, studies show that children can become more fluent in math when their adults provide them with a comfortable, inviting, unbiased learning environment.

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# Dialogical Construction of Goddess Worship: Locating 1980s Religious Movements in the Environmental Movement

Lauren Lynch '23

## I. Abstract

As a consequence of the complex relationship between religion and environmentalism throughout American history, the modern environmental movement struggles to find firm footing in its position on religion. I take a deep dive into the environmental movement of the 1980s in order to track its relationship to the Goddess-worship movement, the budding environmentally-minded religious movement of the same era. I analyze environmentalists' language in their descriptions of Goddess worship, as well as Wicca and nature worship, in order to identify what characterized Goddess worship according to environmentalists. In doing so, I dive into the boundaries that environmentalists created both around themselves and around the religious groups they interacted with.

## II. Introduction

The 1980s were a moment of critical reshaping in the environmental movement. After the bureaucratization of the movement in the 1970s with the advent of the EPA, the movement had the chance to look towards new horizons. The election of Ronald Reagan in 1980 also dramatically altered the state of the environmental movement, as conservatives became increasingly disturbed by the 'conservation' movement and the attention to public resources associated with the Democratic Party. Following the economic slowdown of the late 1970s, Reagan's policies of dissolving the bureaucracy around environmental laws and public lands appealed to working class Americans.<sup>1</sup> This conservative pushback was the most significant organized anti-environmental movement that the country had seen.

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<sup>1</sup> Turner, James Morton and Andrew C. Isenberg. *The Republican Reversal: Conservatives and the Environment from Nixon to Trump*. Cambridge, MA: Harvard University Press, 2018, p. 54-57.

The escalating conflict with the right caused environmentalists to splinter into factions, with the rise of two radical strands of environmental thought—social ecology and deep ecology. Deep ecology describes an ecological philosophy that sees the natural world as intrinsically valuable outside of human usage and seeks to protect the natural world from interference and extraction. This philosophy inspired and informed “militant wilderness activists” like noted environmental activist Dave Foreman and Earth First!, his organization. In contrast, the philosophy of social ecology, as most famously theorized by Murray Bookchin, embraces a more humanist approach to being in relationship with the natural world. Bookchin sought to create an ecological society that was founded on the absence of hierarchy and synergistic relationships with other beings on Earth.<sup>2</sup> Debates between the adherents of these ideologies in large part sculpted the shape of the environmental movement of the 1980s. The conservative attack on the environmental movement was essential in defining this identity crisis within the movement. What had previously been considered mainstream environmentalism, which was closely tied to deep ecology, began to fracture and secularize in an attempt to gain greater political legitimacy. At the same time, the countercultural movement of the 1960s fed the Goddess worship movement, which embraced neopaganism and nature worship. Goddess-worship groups and their ideals, like rejection of traditional religious dogma, the dissolution of spirit-matter dualism, and belief in a universal oneness of all beings, flourished through the 1980s. The conflicts between the sects of the environmental movement, as well as their respective relationships to New Age, shaped the spiritual and religious tones of what is now the

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<sup>2</sup> Bookchin, Foreman, and Chase. *Defending the Earth*, p. 8-9.

modern environmental movement.

There was significant fluidity between the categories of ‘environmentalism’ and ‘Goddess-worship,’ in that many people who ascribed to Goddess movement ideals also identified themselves as environmentalists. Nevertheless, these categories were often invoked to depict discrete categories of people, in particular by environmentalists who sought to distance themselves from eco-religions and nature worship. Even those Goddess worshippers who positioned themselves as aligned with the goals of the environmental movement described themselves as in conversation with environmentalists, rather than as a part of the movement. The critiques of Goddess worship from those who identified as environmentalists (sans Goddess-worship motivations) had such an impact that they inspired this positioning of environmentalists and Goddess worshippers as discrete categories, rather than overlapping identities amidst the same group of people. In this essay, I use the term ‘environmentalist’ to describe a broad subset of people who took part in the activism around climate change and environmental contaminants.

I use the term ‘Goddess movement’ to categorize the umbrella of New Age religious beliefs, ecofeminist religion, neopaganism, nature worship, and Wicca. Social ecologists like Bookchin and Biehl only occasionally referred to Goddess worshippers specifically, but they often used terms like ‘New Age,’ ‘eco-religions,’ ‘neopaganism,’ or ‘nature worship’ interchangeably. Their nonspecificity in using these terms interchangeably is both exactly what I want to examine, but also presents a challenge for how I am able to coherently talk about these ideas as a singular unit. In fact, for example, movements like New Age and Wicca were historically distinct movements. Their use as interchangeable terms facilitated a cultural expectation whereby these groups’ shared values became their defining features, glossing over their meaningful differences. I chose to use the term ‘Goddess movement’ to categorize these shared values, because it refers to a broad subset of people who chose to worship a feminized Goddess, rather than a God. This style of worship ranged from people who ascribed to an essentially Judeo-Christian tradition and chose to replace the term ‘God’ with ‘Goddess,’ to religious ecofeminists, to Wiccans. This term also works because it encompasses many of the people that were publicly in conversation with environmentalists, like

Starhawk and Carol Christ. Both Starhawk and Christ come to the movement from different backgrounds and beliefs, but fit into the category of Goddess worshippers.

In particular, Bookchin and his peers in the field of social ecology were critical to positioning Goddess worship outside of, and sometimes antithetical to, the environmental movement. Due to their prolific writing and the public visibility of their debates, Bookchin and his peers highly influenced the environmental movement. As a result of Bookchin and his peers’ attacks on Goddess worship, these words became strategic terms in a political environment. Consequently, their discursive meaning began to separate from a more historically accurate meaning. In this essay, I will examine the language of environmentalists like Bookchin in their descriptions of Goddess worship and discuss how this language discursively produces Goddess worship as a category and identity. By doing so, environmentalists played a significant role in defining the boundaries of New Age, Wicca, and nature worship—what and who could be included and excluded in the use of those terms? By examining the degree to which these terms were embedded in environmentalists’ political project, I argue that the boundaries around these terms in turn shaped the function of femininity within the environmental movement. I use the work of gender theorist Judith Butler to frame my approach to the construction of gender in this context.

### III. Theoretical Approach

My theoretical approach to examining how this particular rift in the environmental movement constructed the category of the feminine is guided by Butler’s theory of gender performance outlined in their book *Gender Trouble: Feminism and the Subversion of Identity*. Butler argues that gender and sex have recently been defined in the American context with “radical discontinuity” between the two.<sup>3</sup> Building on this idea, they argue gender is only a cultural interpretation of sex. In defining gender in this way, however, we simultaneously permit that sex itself is a gendered category. By identifying that this understanding of the relationship between gender and sex is nonsensical, they develop a definition of gender that encompasses the production of sex as a gendered

<sup>3</sup> Butler, Judith. *Gender Trouble: Feminism and the Subversion of Identity*. New York: Routledge, 1999, p. 10.

category.<sup>4</sup>

Butler locates themselves as building off of the work of Simone de Beauvoir in *The Second Sex*, in which Beauvoir argues that gender is constructed—people become a gender over time rather than being born into a gender identity. In some ways, Butler engages this idea of construction, while in some ways rejecting its premise in locating the body as a passive medium which construction is enacted upon, and taking Beauvoir’s work to a more radical premise.<sup>5</sup> Butler theorizes that gender is not innate or essential, but rather is the result of “words, acts, gestures and desire.” For the purposes of my project, I am particularly interested in the role that words play in this construction of gender. These acts of “corporeal signification... produce the effect of an internal core or substance, but produce this *on the surface* of the body” rather than being produced by the body itself.<sup>6</sup> Consequently, they argue that these words, acts, gestures, and desire are performative, in that the identity that they indicate are constructs only sustained through those behaviors themselves.<sup>7</sup> Butler importantly *does not* seek to invoke performance to signify that they are artificially or inauthentically carried out as we might think of performative in the context of acting.

Butler’s notion of the production of gender relies heavily on what they refer to as the “heterosexual matrix,” as suggested by their citation of desire as one of the bodily acts that constitute gender performance. They argue that heterosexual norms are essential to facilitating gender performance. The particular importance of heterosexuality is derived from the role that heterosexuality plays in inscribing the gender binary; they write, “That institutional heterosexuality both requires and produces the univocity of each of the gendered terms that constitute the limit of gendered possibilities within an oppositional, binary gender system.”<sup>8</sup> Here, Butler points to the importance of heterosexuality in differentiating between masculine and feminine characteristics, practices, habits, etc. The importance of differentiation as a goal of gender norms furthers their claim that gender is performed rather than

a stagnant identity. Consequently, Butler sees their work in theorizing gender performance as “an effort to think through the possibility of subverting and displacing those naturalized and reified notions of gender that support masculine hegemony and heterosexist power.”<sup>9</sup>

By looking at the language of social ecologists in their descriptions of Goddess worshippers, I identify what comprised the category of gender in this particular rift in this environmental movement. Social ecologists like Bookchin both produced the category of femininity in their discussion of Goddess worship and reflected existing ways of talking about femininity. Consequently, painting a picture of femininity in this moment allows us to locate opportunities for intervention where this relationship to femininity informs the values of the environmental movement in harmful ways.

#### IV. The Language of Environmentalists

Before the National Green Gathering in June 1989, the Burlington Greens, the Burlington, Vermont chapter of the Green Party, drafted policy statements to present at the gathering. The national gathering would define the American Green Party’s policy strategy. Murray Bookchin and Janet Biehl, both members of the Burlington Greens, drafted policy statements for this gathering and published them in their newsletter, *Left Green Perspectives*, published from 1986 through 2000. *Left Green Perspectives* had significant influence in defining the environmental consciousness of the political left.<sup>10</sup>

In one of Biehl’s policy statements, “On Theistic Spirituality,” she adamantly rejects the idea that Goddess worship should have a place in building the environmental movement envisioned by social ecologists. Her critique of Goddess-informed environmentalism is

<sup>9</sup> Ibid, p. 44.

<sup>10</sup> The newsletter itself had between 200 and 300 subscribers, but its articles, especially those written by Murray, were often widely reprinted. Biehl herself also recounted that many editors of European anarchist periodicals subscribed to the newsletter and translated the articles for their own newsletters, so “the impact of [*Left Green Perspectives*] went far beyond the immediate subscribers.”

Biehl, Janet. ‘Re: Left Green Perspectives’. Email, 2023.

<sup>4</sup> Ibid, p. 11.

<sup>5</sup> Ibid, p. 13.

<sup>6</sup> Ibid, p. 173.

<sup>7</sup> Ibid

<sup>8</sup> Ibid, p. 30.

twofold.<sup>11</sup> Firstly, she writes that religion necessitates social hierarchy through priests and priestesses. Drawing on the tenets of social ecology, she asserts that all forms of hierarchy legitimize the politics of domination. Secondly, she is concerned with religious traditions' abandonment of rationality. Biehl claims that this rationality is essential for ecologists' ability to "take the hard-headed look at hierarchy and domination so necessary to bring about the destruction of hierarchy and domination."<sup>12</sup> Without this hard-headed mindset, she believes that people are susceptible to loss of critical thinking and at risk for manipulation. At times, Biehl's approach becomes extremely defensive, attempting to portray Wiccans as completely out-of-touch. This is most poignant when she writes, "In nature, there is not now, never was, and never will be a goddess—or a god—of any kind. The dualism of 'spirit and matter' is not overcome by goddess religion but rather is perpetuated by it."<sup>13</sup> Her language here leaves no room for discussion on the topic; Biehl prioritizes separation of Wiccans from environmentalists rather than using language to change their minds and hearts. Rather than proposing solidarity across the religious/secular boundary, Biehl's assertion that there "will never be a goddess... of any kind" suggests that Goddess worshippers do not deserve a place in the movement.

Biehl's criticisms sparked rebukes from Goddess worshippers. The witch and Wiccan priestess- Kym Lambert, wrote a letter to the editors claiming that Biehl misrepresents Wiccan views and misunderstands the purpose they serve. Moreover, Lambert points out that in Biehl's claim that Goddess texts are written at a "sixth-grade level," she reinforces a hierarchy that establishes intellectuals as the authority on environmental matters.<sup>14</sup>

Bookchin also made his feelings about Goddess worship and religiously informed environmentalism clear. In November 1989, the Learning Alliance, a New York

City alternative education center, sponsored a dialogue between Bookchin and Dave Foreman, one of the icons of the deep ecology movement. During this public dialogue, later transcribed into the book *Defending the Earth: A Dialogue Between Murray Bookchin and Dave Foreman*, Bookchin stated the importance of differentiating between a spirituality that acted as a "wholesome sensitivity to nature" versus a religiously informed environmentalism that "required or expected belief in an atavistic, simple-minded form of nature worship peopled by gods, goddesses, and eventually by a new hierarchy of priests and priestesses."<sup>15</sup> His belief that this worship distracted from real change led him to assert that the inclinations towards this religious movement "among many deep ecologists, eco-feminists, and 'New Age' greens" deeply worried him.<sup>16</sup> Bookchin's grouping of 'nature worship,' 'deep ecologists,' 'eco-feminists,' and 'New Age greens' as all threatening to the environmental movement positioned each of those terms in the same ideological category; a category in which the belief in an innate spiritual value in all beings was a threat to the success of the movement.

Bookchin's critiques of Goddess worship were informed by his association of Goddess worship with deep ecology. A significant part of Bookchin's critique of the deep ecology movement was his belief that it fed the eco-religions that he so despised. In another article in *Left Green Perspectives*, he writes that deep ecology is so concerned with prioritizing 'nature' over humankind, that, as a philosophy, it functions in close tandem with "nature-worship."<sup>17</sup> Bookchin cites ancient Egypt as evidence for the harms of nature worship, as it was a society both filled with animal or part-animal/part-human deities while simultaneously being one of the "most hierarchical and oppressive societies in the ancient world."<sup>18</sup> He goes so far as to use the term "Eco-la-la" to refer to this type of nature worship.<sup>19</sup>

<sup>11</sup> Though she does not reference Wicca explicitly in this article, her signaling towards it is clear with her references to eco-feminist religious traditions that worship the Goddess and draw on cultural inspiration from Neolithic Europe.

<sup>12</sup> Biehl, Janet and Murray Bookchin. "Capitalism, Consensus, and Theistic Spirituality." *Institute for Social Ecology*, June 24, 1989. <https://social-ecology.org/wp/1989/06/capitalism-consensus-and-theistic-spirituality/>.

<sup>13</sup> Ibid

<sup>14</sup> Ibid

<sup>15</sup> Bookchin, Foreman, and Chase. *Defending the Earth*, p. 36.

<sup>16</sup> Ibid

<sup>17</sup> Bookchin, Murray. "Social Ecology versus Deep Ecology: A Challenge for the Ecology Movement." *Green Perspectives: Newsletter of the Green Program Project*, nos. 4-5, 1987, [http://dwardmac.pitzer.edu/Anarchist\\_Archives/bookchin/socecovdeepeco.html](http://dwardmac.pitzer.edu/Anarchist_Archives/bookchin/socecovdeepeco.html).

<sup>18</sup> Ibid

<sup>19</sup> Ibid

### Impact of their Rhetoric

News articles about Bookchin from the time period draw our attention to how his work was received and understood by the general public as his own writing's denseness and complexity often made his ideas relatively inaccessible to the general public. In one *L.A. Times* article published in 1989, reporter Bob Sipchen describes Bookchin's critique of the "radical environmental movement" as focused on two threads within the movement; Sipchen writes that Bookchin is both concerned with biocentrism in deep ecology and the "overlapping" New Age ideas that seek "mystical or meditative solutions to environmental woes."<sup>20</sup> Sipchen pays significant attention to the responses of other central figures of the environmental movement to Bookchin's critiques. Deep ecologists acknowledge that Bookchin's assessment of deep ecology as unconcerned with social justice is in some instances fair- but claim that he exaggerates its importance in deep ecology. They rebuke Bookchin by calling his approach so intellectualized that it is out of touch and lacks an important element: a personal connection to nature.<sup>21</sup> Importantly, Sipchen highlights critiques of Bookchin from people who identify as environmentalists, rather than people who purport to align more closely with New Age.

Sipchen cites Peter Borrelli, editor of the National Resources Defense Council's *Amicus Journal*, in tracking the trajectory of both deep ecology and social ecology's radical critiques as becoming more present in the minds of "mainstream environmentalists" as the consequences of environmental destruction were becoming more apparent and more grave.<sup>22</sup> Even those mainstream environmentalists who were only "amused" by the debate were nevertheless paying attention to it.<sup>23</sup> Not only does he cite a wide variety of environmentalists that were discussing this particular conflict, but he also published coverage of this debate in one of the most well-read newspapers in the United States. Both of these facts point to the ways in which this debate between social ecologists

and deep ecology/nature worship was reconstructing the contours of the environmental movement in the public eye.

### The Goddess movement, as defined by environmentalists

By examining the language used by environmentalists, especially Murray Bookchin and the radical left, we can conclude that 'Goddess worship' was used to invoke certain qualities and features that did not paint a perfectly accurate picture of their meaning. Whether or not environmentalists' representations of Goddess worship were accurate, each of these terms was embedded in a particular political project. Their colloquial use impacted the boundaries around these groups despite the inaccuracy of these depictions. That being said, I identify several qualities of Goddess worship that Bookchin and his peers invoke through their discussion of this religious movements, which include feminine character, orientation towards consumerism, ideological totalitarianism, hierarchy, heresy, and nature worship/ecocentrism. Given Butler's claim that gender is a dialectical process and construction, rather than a stagnant category, I argue that each of these facets of the Goddess movement, as characterized by social ecologists, also functioned to characterize femininity more broadly within the environmental movement.

### V. Feminine Character

Bookchin leans on "remarkable ecofeminist" Chaia Heller to describe nature-worship as "Eco-la-la."<sup>24</sup> Bookchin does not take the time to precisely describe what he means in his use of the term Eco-la-la, nor does he offer a citation to find where and how exactly Heller herself defined Eco-la-la. Because Heller had no formal publications before 1987 (the year Bookchin published his article), it seems that the term's coining likely took place in some sort of personal interface between Heller and Bookchin. Bookchin's lack of a specific definition allows us to read the term with all of the qualities of femininity that it implies at face value. The implications of the term are manifold; it argues New Agers are in-the-clouds and out of touch with reality, as well as assuming a kind of general silliness. The assumption of ungroundedness and silliness builds on Bookchin's critique that nature worship

<sup>20</sup> Sipchen, Bob. "Ecology's Family Feud: Murray Bookchin Turns Up Volume on a Noisy Debate." *L.A. Times*, March 27, 1989. <https://www.latimes.com/archives/la-xpm-1989-03-27-vw-425-story.html>.

<sup>21</sup> Ibid

<sup>22</sup> Ibid

<sup>23</sup> Ibid

<sup>24</sup> Bookchin, "Social Ecology versus Deep Ecology."



and eco-religions are not solution-oriented and that they distract from the real problem at hand, as he articulated in his Learning Alliance debate with Foreman.

As previously mentioned, Biehl also wrote with disdain for what Wicca was doing to the environmental movement. Especially in her language of demanding “hard-headed[ness]” in the environmental movement, she aligns herself with the values of masculinity and rationality.<sup>25</sup> Biehl’s aversion to the feminized softness and emotionality present in the spiritual and religious circles of environmentalists reads as if she is disciplining these women. By accusing Wiccan writing of being childish and working to instate a masculine stoicism into the movement, she argues for its political legitimacy.

In his sharp critiques of Eco-la-la as completely missing the point in addressing the ecological crisis, Bookchin utilizes a gendered bias to further the idea of their lunacy and advance a secular social ecology. Therefore, representations of Wiccans ungroundedness or out-of-touch nature became intertwined with representations of femininity. Paired with his academic and dense writing, “Eco-la-la” suggests his belief that the women seeking to contribute to the environmental movement could stand to read some more political theory and touch some more grass.

Importantly, Bookchin did not align himself with ecofeminists across the board. In his book *The Philosophy of Social Ecology: Essays on Dialectical Naturalism*, he writes,

“Only later was ecofeminism reduced to the antirational and crudely visceral level of a Starhawk, where invocations of magic, goddess worship, and witchcraft become ‘feminist’ ways of eluding reality. Too many ecofeminists, albeit not all, now tend to privilege women over men cognitively and morally, while the original universalist and egalitarian approach of the feminist movement has withered significantly.”<sup>26</sup>

While Bookchin aligned himself with a brand of ecofeminism that fit his liking, he demonstrated his comfort with relegating certain brands of feminism to

<sup>25</sup> Biehl and Bookchin, “Capitalism, Consensus, and Theistic Spirituality.”

<sup>26</sup> Bookchin, Murray. *The Philosophy of Social Ecology: Essays on Dialectical Naturalism*. 2nd ed. Montréal: Black Rose Books, 1996, p. 5.

elementary-level theory. Not only did this theory “elude reality,” but it was also essentially useless in its “anti-rational[ity].”<sup>27</sup> His emphasis on anti-rationality calls on a long legacy of associating femininity with irrational thinking.

## VI. Ideological Totalitarianism

Bookchin also takes issue with Eco-la-la’s ideas about the falsehood of the self and participation in a universal oneness. In particular, he is concerned with the potential to lose one’s individuality in submission to universal oneness, which obscures your capacity to think critically and independently. He writes that the Eco-la-la movement-

“preaches the ‘realization of self-in-Self where ‘Self’ stands for organic wholeness.’ That a cosmic ‘Self’ is created that is capitalized should not deceive us into believing that it has any more reality than an equally cosmic ‘Humanity.’ More of the same cosmic Eco-la-la appears when we are informed that ‘the phrase ‘one’ includes not only men, an individual human, but all humans, grizzly bears, whole rainforest ecosystems, mountains and rivers, the tiniest microbes in the soil and so on.’ A ‘Self’ so cosmic that it has to be capitalized is no real self at all. It is an ideological category as vague, faceless, and depersonalized as the very patriarchal image of ‘man’ that dissolves our uniqueness and rationality into a deadening abstraction.”<sup>28</sup>

The language of positioning religious ideology in contrast with independent thinking, and especially rationality, calls on the intellectual legacy of the Enlightenment. With this language, Bookchin paints rationality and uniqueness as functioning in tandem, in turn reinforcing an intrinsic value in uniqueness. Bookchin’s sense of the importance of uniqueness highlights his fear of losing independent thinking. In fact, in his Learning Alliance debate with Foreman, he condemns the “uncritical rejection of the Enlightenment’s valid achievements.”<sup>29</sup> In other words, Bookchin argues that adherence to religious traditions or use of rituals as mechanisms for societal organization and identity formation makes people gullible, and therefore

<sup>27</sup> Ibid

<sup>28</sup> Bookchin, “Social Ecology versus Deep Ecology.”

<sup>29</sup> Bookchin, Murray, Foreman, and Chase, *Defending the Earth*, p. 59.

subject to ideological totalitarianism.

## VII. Consumer Orientation

Bookchin's fear that universal oneness promotes ideological totalitarianism is derived from his theory that this oneness is defined by commodity culture, which surrenders the self to "corporations, centralized government, and the military."<sup>30</sup> Bookchin's assessment of the role that corporations play in creating this common identity is supported by the work of American ethnographer Courtney Bender in her book *The New Metaphysicals: Spirituality and the American Religious Imagination*. Bender maps the institutions that produce modern American spirituality—an identity tightly tied to the ideas and legacy of the 1980s New Age. In her mapping, Bender seeks to refute the idea that the discourse around and production of spirituality is derived exclusively from personal experience or contact with the divine. Through qualitative research of the spiritual community in Cambridge, Massachusetts, she identifies a wide variety of institutions that produce American spirituality, many of which are organizations that commodify spirituality through yoga classes, alternative medicine, etc. In her reflection on the bulletin board at The Harvest Cooperative's cafe, she writes "If religion in America is represented by First Baptist's brick and mortar buildings, institutional stability, and continued community presence, then spirituality is represented by the bulletin board... jostling with advertisements for all sorts of for-profit services"<sup>31</sup> With its rotating promotion of services that claim to heal one's body and mind, American spirituality takes on many of the features of late stage capitalism, whereby one's identity as a spiritual person is subject to the marketplace of commodified traditions that become personal branding mechanisms. This spirituality is intertwined with the universal oneness that Bookchin fears. In fact, Bender finds that the idea of a universal oneness is essential to American metaphysicals' explanations of their spirituality and spiritual experiences.

Nevertheless, Bender does not claim the relationship is one to one; while the universal oneness may

be impacted by consumerism to varying degrees, Bender does not suggest that corporations entirely define spiritual identity. In addition to her discussion of the role of commodifying industries in producing spiritual identity, she also notes institutions like churches and art collectives play a significant role in facilitating spiritual community by offering these groups their space. Moreover, Bender makes no mention of the government or military in shaping how metaphysicals conceive of the universal oneness. She would likely find it a gross oversimplification to say that the concept of universal oneness necessitates the loss of individual uniqueness in its subservience to corporations. The most critical analysis of Bookchin's argument suggests then that his inability to distinguish between acknowledging one's existence as part of a unified oneness and losing one's personality to consumer capitalism reveals a fatal flaw in his own logical flow on the relationship between communalism and individualism. Instead, it reveals his attachment to the ultimate importance of individualism.

## VIII. Hierarchy

One of the central themes among social ecologists' critiques of New Age and nature worship is that religion facilitates a hierarchy of gods, goddesses, priests, and priestesses. The abolition of all forms of hierarchy is a central tenet of social ecology and essential to the way that Bookchin's work was received and understood. It was so central, in fact, that it was the only thing mentioned in Wes Enzinna's one-sentence synopsis of Bookchin's popular book *The Ecology of Freedom*. He writes, "[Bookchin] argued that man's destruction of the environment is the result of his domination of other men, and only by doing away with all hierarchies... could humanity avert ecological and economic collapse."<sup>32</sup> In Bookchin's mind, any form of worship or reverence fell into the trap of constructing hierarchies along with it. While New Agers and Wiccans argued that their forms of spirituality deconstructed the spirit-matter dualism present in traditional forms of Judeo-Christian religions, Bookchin argued they perpetuated it. The spirit-matter dualism was

<sup>30</sup> Bookchin, "Social Ecology versus Deep Ecology."

<sup>31</sup> Bender, Courtney. *The New Metaphysicals: Spirituality and the American Religious Imagination*. Chicago: University of Chicago Press, 2010, p. 22.

<sup>32</sup> Enzinna, Wes. "Bizarre and Wonderful: Murray Bookchin, Eco-Anarchist." Pulitzer Center. Last modified July 21, 2017. <https://pulitzercenter.org/stories/bizarre-and-wonderful-murray-bookchin-eco-anarchist>.

important for their thinking on hierarchy, as it identifies the divine as being outside of or above physical matter. Therefore, Bookchin's understanding that New Age and Wicca exacerbated a spirit-matter dualism led him to conclude that the construction of the divine separated from physical matter necessitated the construction of hierarchy.

### IX. Heresy

It is important to situate both Bookchin and Foreman's feelings on the Goddess movement within their own religious contexts. Both Bookchin and Foreman leave some space for spirituality within their ideologies, but never explicitly align their environmental philosophies with any religious tradition. This is especially true of Bookchin, who adamantly works to separate his theory of social ecology from any sort of theological grounding. Excavating their personal religious backgrounds helps us add an essential axis of identity to the way that they talk about and relate to Goddess worship.

Mark Stoll, a scholar of religion and environmentalism, however, rigorously assessed the personal religious backgrounds of Bookchin and Foreman in order to situate their ideas within the complex historical relationship between religion and environmentalism in the United States. Stoll finds that despite Bookchin's claims to a only a light spiritual grounding of social ecology, his "advocacy of social solutions based on reason and of rules restricting the socially destructive actions and behavior of individuals, his hostility towards ruling hierarchies, and his vision of a future utopia of small communities, all bear the hallmarks of his Russian Jewish background."<sup>33</sup> Stoll tracks this origin of Bookchin's ideology in his discussion of the Jewish tradition's de-emphasis on discovering God in nature relative to the Christian tradition and its greater emphasis on the importance of community and communal ritual.<sup>34</sup>

Foreman is much less explicit than Bookchin in denouncing religion's place in the environmental movement. In his Learning Alliance debate with Bookchin, Foreman made no mention of religion, even after Bookchin's sharp critique of New Age religious

ideals, and eco-religions in general. Importantly, Foreman's relationship to his religious tradition is much more theologically oriented in comparison to Bookchin's more cultural orientation towards Judaism; Foreman actually sought to become a Church of Christ preacher in his teenage years.<sup>35</sup> The legacy of this relationship to Christianity manifested itself in the style in which he delivered his speeches and the rhetoric of restorationism present in his call for the return of "an original Pleistocene, Paleolithic relation to nature."<sup>36</sup> Stoll goes so far as to align his entire theory of ecological restoration within the legacy of American Protestantism;

"When Foreman denounces greedy exploiters of nature (the sinners), praises the virtues of wilderness (whose purity and authority rival the significance of the Bible to a Christian), calls the repentant to adopt a wilderness ethic (salvation), and preaches return to reverent Paleolithic attitudes to nature (restoration), he is carrying forward in a secular context the values preached by Protestants for nearly five hundred years."<sup>37</sup>

Understanding the religious legacy of their environmental philosophy allows us to add complexity to each of their relationships to New Age religious movements. In his 1998 essay "Alternative Spirituality and Environmentalism," Jon Bloch interviews 22 practitioners of 'alternative spirituality' and finds that more than 75 percent of them began engaging with the ideals of countercultural spirituality after becoming disenchanted with "mainline Religion," a term he uses to describe a variety of mainstream Christian religious sects/institutions.<sup>38</sup> Bloch clarifies that he uses "alternative spirituality" to describe the broad variety of neo-Pagan and New Age practitioners—the same broad group that Bookchin attacks in his own work. 21 of Bloch's interviewees described one of their primary frustrations with 'mainline religions' as being their tendency towards dualism, which they see as not incompatible with the spiritual complexity of life. The overall sense from the

<sup>33</sup> Stoll, Mark. "Green Versus Green: Religions, Ethics, and the Bookchin-Foreman Dispute." *Environmental history* 6, no. 3 (2001): p. 423.

<sup>34</sup> *Ibid.*, p. 418.

<sup>35</sup> *Ibid.*, p. 417.

<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid.*, p. 416.

<sup>38</sup> Bloch, Jon P. "Alternative Spirituality and Environmentalism." *Review of religious research* 40, no. 1 (1998): 55–73.

interviewees is a rejection of the rigidity of religious dogma.<sup>39</sup> Bloch's qualitative analysis of the rhetoric and principles of self-identified alternative spiritualists situates Bookchin and Forema's approach to the Goddess movement within the long history of heretics and anti-heretical movements or rhetoric within the Church. From this lens, we might ask what it does to Bookchin's critique if we imagine it as Christian critique of heresy. Even with a Jewish background, the language of anti-heresy has pervaded so much of history that it is easy to see that Bookchin would still have been steeped in it. Even if Bookchin himself did not believe in the framework of heresy and its relationship to the church, what boundaries did it create to frame Goddess worshippers in this light?

In the reference on heresy in the *Encyclopedia of Religion*, Mircea Eliade et al. track the changes over time in the language around heresy and the manner in which it is invoked. Importantly, they note that the invocation of heresy in the modern era serves more to draw political and social boundaries rather than to make claims to religious truths.

“Matters of social control, power relationships, consensus, and the labeling of normality and deviance are intelligible to both the church and its scholarly critics, for the church's drawing of boundaries to mark off heresy parallels in many ways the drawing of boundaries that most societies engage in to mark off deviance.”<sup>40</sup>

The entry highlights the entanglement of the language of deviance with that of heresy; they build on one another by highlighting social fears and locating these fears within a familiar legacy of deviance. Bookchin capitalizes on the language of the Christian church in deterring people from abandoning a more complex, evolved system of thought (social ecology) for one that is “simple-minded” and “atavistic” (nature worship).<sup>41</sup> This language was especially powerful in defining a group like Goddess worship, which had come to be closely associated with people who identified themselves as witches—a group which has been notoriously branded by the language of heresy.

<sup>39</sup> Ibid

<sup>40</sup> Eliade, Mircea, Charles J. Adams, et al. “Heresy.” *The Encyclopedia of Religion*. New York, N.Y: Macmillan, 1986.

<sup>41</sup> Bookchin, Foreman, and Chase. *Defending the Earth*, p. 36.

## X. Nature Worship and ecocentrism

Goddess worshippers and Bookchin alike would agree that the rituals of the Goddess movement center on the act of nature worship. While Goddess worshippers view nature worship as a way to integrate matter and spirit, Bookchin argues that nature in this framing becomes “mystified.”<sup>42</sup> He writes that the reification of nature allows those who worship it to deny the reality that nature includes human communities and the built environment in their form of environmentalism. This critique of nature becoming separated and unique shapes his belief that nature worship inspires inaction, which is the thrust of his frustration with nature worship.

Bron Taylor explores the relationship between activism and nature worship in his article “Earth and Nature-Based Spirituality (Part II): From Earth First! and Bioregionalism to Scientific Paganism and the New Age.” He studies environmental activists at Earth First! and their relationship with New Agers, at times identifying significant overlap between the two. Taylor argues that for environmental activists in the late twentieth century, social and spiritual rituals bond activists together and reinforce their spirituality and activism, for Earth First! activists in particular.<sup>43</sup> Taylor's careful qualitative assessment of these environmental activists confirms Bookchin's assessment that Earth First! and the theory of deep ecology are founded in a spiritualization of nature. What Taylor finds, however, is that spiritual/religious beliefs promote direct action or other forms of activism, unlike Bookchin suggests in his critique of nature worship.

A central element of Bookchin's critique of nature-worship and eco-religions is that it directs attention away from change and action and towards a sort of spiritually-justified inattention to the material realities of people. Taylor's work suggests that this critique is not necessarily well-grounded. Because of the ways in which more ecocentric environmental philosophies like deep ecology center the intrinsic value of non-human beings, Taylor argues that these philosophies cultivate an impetus towards activism that is promoted and supported by the sort of nature-worship that suggests a spiritual relationship

<sup>42</sup> Bookchin, *The Philosophy of Social Ecology*.

<sup>43</sup> Taylor, Bron. “Earth and Nature-Based Spirituality (Part II): From Earth First! and Bioregionalism to Scientific Paganism and the New Age.” *Religion* (London. 1971) 31, no. 3 (2001): 225–245.

between human and non-human beings. He represents this entanglement of activism and spirituality with his examples of people doing ‘tree sits,’ where they occupy the branches of trees in order to prevent logging efforts. The activists that Taylor both emphasize the ways in which their spiritual connection to the tree allowed them to occupy for as long as they did. Taylor’s findings amplify my claim that Bookchin’s characterization of nature worship was embedded in a political project of isolating Goddess worshippers from the environmental movement, rather than an accurate excavation of what motivates people towards environmental action.

This overlap between activists and nature-worshippers who subscribed to New Age religious ideals complicates the efforts that Bookchin made to separate out this eco-religious movement from the more mainstream environmental movement. Taylor notes that New Agers and radical greens were often able to find common ground when they came together, whether through ritual, debate, or activism.<sup>44</sup> Nevertheless, Taylor uses the language of ‘radical greens,’ ‘environmental progressives,’ and ‘New Agers’ as ways of identifying different groups of people. While Bookchin’s critiques may not have rung true, the ways in which he and others reinforced the language of political environmentalism as discrete from spiritual environmentalism still had an impact. The production of these discrete categories promoted the idea that environmentalism and religious ideals had to be reconciled, or that even when ‘environmentalists’ and ‘New Agers’ came together, they had initially been at odds. Ultimately, though Taylor’s work refutes some of the distinction between activism and nature worship, Bookchin’s language in categorizing New Age and Wicca as primarily worship-oriented groups prevailed.

## XI. Conclusion

The discursive production of the Goddess movement and its relationship to femininity broadly shapes the environmental movement. Because Bookchin, Biehl, and their peers defined femininity as entangled with spirituality, irrationality, emotionality, etc., their work in defining the environmental movement’s goals as antithetical to those traits in turn also worked to define the movement’s relationship to gender.

Despite a core support group composed primarily of women, the leaders and credited figures of the environmental movement are primarily men. The prioritization of masculinity within the movement goes beyond the heralding of men themselves as representatives of the movement; it also affects the broader movement’s tendencies to prioritize science and data as motivating forces over religious connection to ‘natural’ ecosystems. The invocation of New Age and Wiccan ideals as feminine, as well as ungrounded and not solution-oriented, also discursively creates the category of ‘the feminine,’ just as it does for all of the descriptors that I discussed. Therefore, I do not intend to suggest that male presence in the environmental movement came before masculine values, but rather that they were co-produced. Categorizing the entire environmental movement requires broad brushstrokes and the movement has certainly evolved since the 1980s, but the current political fracture between the goals of religious groups and the environmental movement speaks to the legacy of this moment.

Indeed, the discursive production of identifiers as broad as New Age is not unique to these specific identities and groups. In fact, New Agers themselves are well known for their own constant misuse and appropriation of terms that both misrepresented and reified the knowledge and traditions of East Asia. Differing traditions like Taoism, Buddhism, yoga, and acupuncture (to name just a few) became lumped together under the broad identity of the mystical knowledge of the East.<sup>45</sup> Not only were the boundaries and cores of these traditions often blurred, they were also frequently commodified by voyeuristic white people in the United States. Particularly in the context of a movement already grappling with a long history of neocolonialism, I do not seek to argue that the environmental movement would have been better off had it embraced the spirituality of New Age. In identifying the ways in which these terms were used to produce meaning, I seek to identify a paradigmatic approach to thinking about the way that the current environmental movement relates to science, spirituality, religion, femininity, and other broad categories, identifiers, and values that we associate with masculinity or femininity. These reflections on the movement need not lead us to the conclusion that environmentalists should strive to reincorporate

<sup>44</sup> Ibid, p. 236.

<sup>45</sup> Bender, *The New Metaphysicals*, p. 109-110.

New Age spirituality in order to achieve the paradigmatic shifts necessary to change our relationship to the Earth and mobilize against climate change. Nor do my reflections suggest that this particular moment exclusively shaped the environmental movement's sociopolitical dynamics; it is only one piece of a complex puzzle. Rather, these reflections make available the information necessary to begin to untangle the complicated intertwinedness of the movement's values—including its scientific obsessions and weak spiritual affiliations.

That being said, however, unlike many academics, I do not purport to have identified the link that will inspire necessary change within the movement I am discussing. I do not think that excavating this particular moment in the history of the environmental movement will allow us to dramatically alter the way that the construction of gender plays out within the movement. Even to claim that certain dynamics in the modern environmental movement are the result of this important moment in environmental history is virtually useless. These suggestions within the context of academic work are far too self-important for their own good.

The ecosystem of this movement is dynamic and complex. In reality, while the particular moment in environmental history has an important legacy, it is just as much a flash in the pan as any other important moment. I do not believe, however, that this work needs to have a significant and readily identifiable impact on the environmental movement broadly in order to be important or relevant. If we could admit to ourselves that most academic work rarely impacts material reality outside of the academy, we can be much more honest about how this work is important - in turn, allowing it to actually embody its full purpose.

So what then does this work contribute? I began this project as an organizer myself, and, more importantly, a member of the generation that is staring down the barrel of the climate crisis. To be a member of this generation is to understand that we can no longer engage the rhetoric of 'solutions.' There is no turning around at this point. And moreover, to be shocked or indignant by this fact is to have grossly misunderstood what it is to be a member of this generation. What is available to us, however, is the opportunity to build resilience and solidarity *in the face of* the crisis that we face. Building resilience and solidarity requires intimate knowledge of the roles that we play in the ecosystems that we occupy, deep understanding of what

we owe to the communities that we are a part of, and close attention to the harmful socializations that we perpetuate both within ourselves as well as interpersonally.

Consequently, this work is more personal than anything else. It helped me understand a piece of the broader puzzle of my role as an environmentalist, an organizer, and a member of my community. It expanded my understanding of how I occupy and perpetuate gendered categories and locate the ways in which these categories are harmful, as well as opportunities to uproot and repair some of those harms. What is most significant is that I realized I was only putting two pieces of a very large puzzle together, even after a year of work on this particular project, which was informed by many more years prior of studying the environmental movement. It will be a lifelong project, then, to begin to work through the historical legacies that play out not only in my world, but also in my relationships and communities. This project has contributed to that project for me. I hope that it is able to be a part of that process for others.

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## Green Gold and Silver Cities: Gregory Mason, 20th Century Maya Archaeology, and United States Imperialism in Central America



**Peyton Beeli '23**

### Introduction



Two photos of Gregory Mason found inside his passport, circa 1930.

Gregory Mason (1889-1968) was a journalist, archaeologist, adventurer, and author operating primarily

in the early 20th century. A New York native and Williams alum, Mason was advertised in a 1931 issue of *The Williams Record* as a preeminent “explorer, author, lecturer” and “noted authority on Yucatan and prehistoric Central American civilization.”<sup>1</sup> His career ranged wildly, from a war correspondent for Theodore Roosevelt’s *The Outlook* magazine, to a leader of American expeditions in search of Maya ruins in Belize, to the head of NYU’s journalism department and fiction author. His uniquely multifaceted career, especially his work in Maya archaeology, provides a potent lens through which forces of American imperialism in the interwar period can be examined. Seeking to expand its economic power and

<sup>1</sup> “Mason to Speak on ‘Land of Rain Gods.’” *The Williams Record*. Dec. 5, 1931. Vol XLV. Williams College Special Collections. pg. 1.



political hegemony over the Western Hemisphere, in the late 19th and early 20th centuries the United States turned its gaze southward towards Central America. An area rich in natural resources, the Yucatan Peninsula proved to be a promising target for the machines of American imperialism. Maya archaeology (and by extension, archaeologists) became a tool utilized by the United States to help establish social, economic, and cultural influence in Central America and garner support for their involvement in the area back home. American chicle harvesters, museums, and individual archaeologists formed a triangular symbiotic relationship to maximize economic and cultural capital extraction from the Yucatan. This alliance created an exponentially intensifying nexus of power that grew to underpin United States influence in the region. Corporations like the American Chicle Company and the United Fruit Company made entry into the Yucatan Peninsula in the very early 20th century, developing transportation infrastructure and accruing knowledge of the territory. At the same time, burgeoning interest in the Maya arose from American intellectual groups like the Carnegie Institution, the Harvard Peabody Museum, and the Museum of the American Indian that were looking to push the frontier of exploration past the continental United States to compete with European institutions. Archaeologists, taking advantage of both the infrastructure created by U.S. companies and funding from museums, became the agents on the ground active in these processes of exploration, recording, and extraction that were essential to American operations in the Yucatan Peninsula.

Gregory Mason made his career at the center of these interconnected systems in the 1920s and 30s. Using funds and infrastructure from chicle companies and museum institutions, Mason's expeditions found new Maya sites and brought back artifacts to fill the glass cases of New York's museum galleries. His key contribution, however, was his popularization of the Maya to the American public, working both to garner support for continued operations and to justify the entrenchment of American corporations in the Yucatan. As one of the first professionals to combine archaeological practice and popular journalism, his writing was especially influential to the rise in interest in the ancient Maya at the time. He worked to tie the modern United States to the ancient Maya, coining the moniker "First Families of America" and relating Maya achievements to present industrial

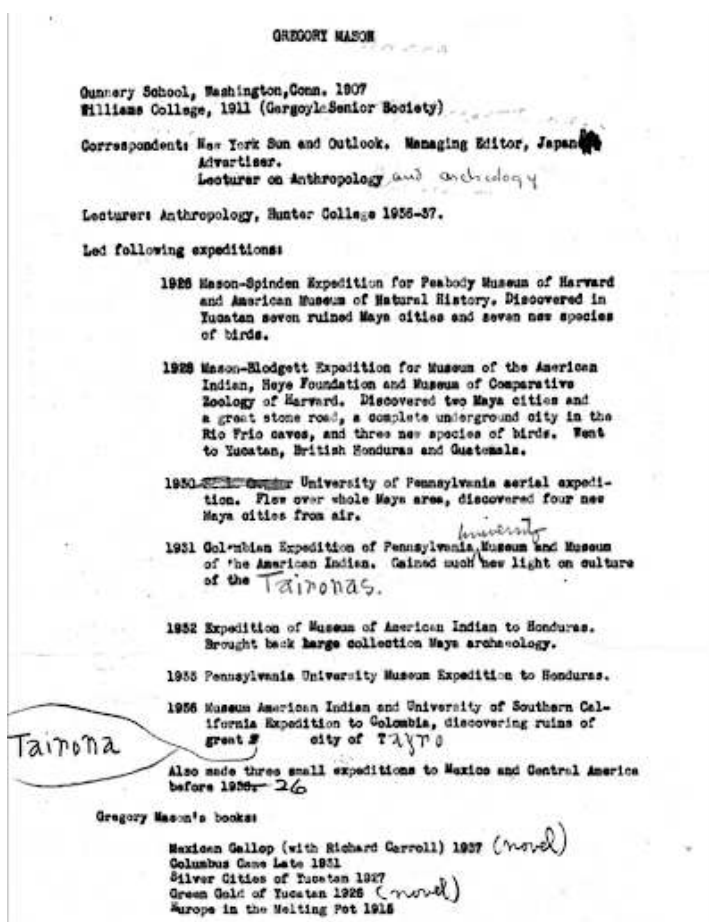
advancements in the States. Despite Mason's lauding of the Maya as an exceptional culture and his celebration of their achievements, the elevation of the ancient Maya perpetuated by archaeologists led to a convenient dismissal of the modern Maya still living in Central America. Through recorded interactions with indigenous Maya, the dominance of Maya archaeological practice by white, wealthy American men, and derogatory comparisons to their ancient ancestors, depictions of indigenous people often both ignored the key role they played in American corporate and archaeological operations and denied the modern Maya ownership of their own history. Mason and his colleagues worked to co-opt the Maya's ancient past as an American one, implicitly providing justification for American control of Maya land and their history in the present and future. The concatenation of corporate capital, extractive museum policies, archaeological ambition, and media sensationalism in the Yucatan Peninsula defined American imperialism in the region and its relationship with both the ancient and modern Maya culture.

### **Brief Note on Methodologies**

The main source of information for the research and writing of this paper is the Gregory Mason Papers available in the Williams College Special Collections. This collection, consisting of 21 boxes of ephemera, including primary source documents, letters, journals, drafts of work, newspaper clippings, and images, provided the foundation for this piece. These papers were personal property of Gregory Mason himself and provided new insight into his public work while also revealing previously unknown information about his life and career. The author spent the fall 2022 semester working through 12 of these 21 boxes. The original work borne of that research is a longer report, which has been condensed here. All photos and figures come from the Gregory Mason Papers unless otherwise noted.

Another key resource was a film about Gregory Mason's first Maya archaeological expedition in 1926. Video footage taken on the expedition is publicly available on YouTube thanks to Bob Connelly, who wrote, produced, and edited a documentary style video about the party's archaeological mission into the Yucatan. The video is entirely footage from Mason's companion Ogden McClurg's camera, voiced over with Connelly's commentary and quotes from Mason's book *Silver Cities of Yucatan* (1927). The footage was given to Connelly

courtesy of McClurg's family. The video is entitled "Silver Cities of Yucatan: The Mason-Spinden Expedition", and can be found here: <https://www.youtube.com/watch?v=ntISa5pllgo&t=1209s>.



An overview of Mason's expedition history and published works, in his own words, circa 1940. Williams College Special Collections.

## I. Early 20th Century Maya Archaeology: The Mason-Spinden Expedition (1926)

In his book *Silver Cities of Yucatan*, Gregory Mason waxes poetically that "there is glamor and mystery enough in a quest of ancient cities in Central America, yet the finest part of the adventure is intellectual rather than physical."<sup>2</sup> Despite this romantic sentiment, these intellectual pursuits were in reality undergirded by extensively planned, months-long expeditions by American archaeologists

and other interested parties into the dense jungles of Central America. Archaeological expeditions by Americans to the region had been occurring occasionally since John Lloyd Stephens and Frederick Catherwood in the mid-19th century. In this early 20th century period, they had become newly institutionalized with the combined rise of financially powerful academic institutions and incursion of American corporate interests into Central America. The typical 1920s and '30s expedition into the Yucatan Peninsula was financed by museums or universities, corporations with interests and infrastructure in the region, or newspapers capitalizing on burgeoning public excitement about the ancient Maya. These bodies, especially museums and universities, wanted a piece of the popular "new" sphere of Maya archaeology, looking to add valuable objects to their collections or be associated with a Maya site of aesthetic or academic interest. Gregory Mason's first foray into Maya archaeology, the Mason-Spinden Expedition, provides a representative example of the culture of exploration and the nature of archaeological expeditions in the period.

The Mason-Spinden Expedition was more exploratory and less extractive in form than other, later expeditions that Mason participated in, but is the most well-documented through his published account, *Silver Cities of Yucatan*, and the plethora of articles chronicling the journey that he wrote for *The New York Times* in exchange for their sponsorship. For three months in early 1926, Mason and four other Americans—archaeologist Dr. Herbert J. Spinden, shipboard navigator and naval reserves commander Ogden Trevor McClurg, leading Harvard ornithologist Ludlow Griscom, and young artist Francis Whiting traveled by boat, mule, and foot throughout the Mexican state of Quintana Roo (Figures 1, 2). From the planning process, the expedition had a rough itinerary based on advice from other archaeologists such as Sylvanus Morely, information from the Chicle Development Corporation, and known sites of potential interest for both Griscom's ornithology and Mason and Spinden's archaeology. There was, however, plenty of room for improvisation, changes, and the chasing of promising leads, reflecting the flexible outline of many similar contemporary expeditions. Expeditions of this caliber were planned to cost a few thousand dollars, with variation depending on duration and amount of members—Mason asked for \$4000 in 1933 (equivalent to about \$91,000 today) for an expedition

<sup>2</sup> "Mason, Gregory. *Silver Cities of Yucatan*. New York: G. P. Putnam's Sons, 1927. Print. vii.

of similar intensity.<sup>3</sup> Leaving on January 9th on the steamship S.S. Saramacca for Belize, the capital of what was then British Honduras, Mason and Spinden arrived in Quintana Roo and immediately rented a schooner and two dinghies (christened the HMS Albert, the Imp, and the Delirium Tremens, respectively) from the British and set off for travel along the coast. The expedition traveled primarily by water, spending days on board the HMS Albert broken up by exploratory excursions onto spotted islands or into local towns.

Locals proved generously helpful to Mason and his team, becoming essential to the success of their operation. Word of archaeologists in the area looking for old buildings and willing to pay for information tended to spread, and people often came to them, looking for tall men in classic pith helmets and khaki clothing which members of the expedition often wore to impress locals and identify themselves as professional academics.<sup>4</sup> In this period in Central



The Mason-Spinden Expedition: Mason (bottom left), Griscom (top left), Spinden (top right), Whiting (bottom center), and McClurg (bottom right)

Figure 1: The Mason Spinden Expedition: Mason (bottom left), Griscom (top left), Spinden (top right), Whiting (bottom center), and McClurg (bottom right). Still from video footage taken by McClurg on the expedition, 1926

America, “information leading to the discovery of ruins

is not given away but sold.”<sup>5</sup> On the Mason-Spinden Expedition, Mason offered one of his hired guides one hundred pesos if a ruin he advertised to the party was legitimate, and other bonuses if he could “get wind” of any others before they returned.<sup>6</sup> These collaborations were often unexpected and spontaneous. The expedition’s best tip came from a trip to Santa Cruz de Bravo, where Mason and Spinden traveled to explore and liaison with General May, the region’s Maya leader, and Julio Martin, the chief regional chicle buyer. While there, a man entered their lodging unannounced and offered to show the pair some ruins he knew about, eventually leading them to the site of Muyil.<sup>7</sup> Working off of the developing relationship between chicle harvesters and archaeologists, Mason and other explorers took advantage of local knowledge for their work and engaged on a regular basis with indigenous people in the regions they were exploring, often for the short-term benefit of both parties.

Armed with information, the exploratory process was often relatively procedural: once a ruin or site of interest was discovered, pictures and measurements were taken, observations and location were recorded, and occasionally an overnight stay was made in the case of larger sites that took longer to document. Once satisfied, the party would return to the nearest town, and the process of sailing, hunting, exploring, conversing with locals, and tracing leads into the jungle would restart. It was this cycle of reconnaissance, local interaction, exploration, and discovery that characterized many Central American expeditions in this period. More specifically, traveling “into territory never before penetrated by archaeologists,” the Mason-Spinden Expedition revealed the location of “seven cities and several lesser sites” which included cities at Muyil and Okop as well as multiple smaller sites near Cozumel Island.<sup>8</sup> Introducing Gregory Mason to the realities of conducting and executing an expedition to Central America, this exploration proved both a testing ground of Mason’s ability and a confirmation of

<sup>3</sup> Letter from Gregory Mason to Horace H.F. Jayne, May 16, 1931. Gregory Mason Papers, Williams College Special Collections.

<sup>4</sup> Gregory Mason stood at an impressive 6’5”, according to his passport. His recollections of his time exploring feature many gripes about too-small hammocks and too-short ceilings.

<sup>5</sup> Mason, Gregory. “America’s Buried Past”. The Saturday Evening Post, January 19, 1929. 38.

<sup>6</sup> Mason, Gregory. *Silver Cities of Yucatan*. New York: G. P. Putnam’s Sons, 1927. Print. 140.

<sup>7</sup> Mason, Gregory. *Silver Cities of Yucatan*. 139.

<sup>8</sup> Mason, Gregory. “Ruins of the Mayas Yield New History”. The New York Times, May 9th, 1926.





and Guatemala where sapodilla trees are primarily found.<sup>9</sup> These corporations, with the support of the Mexican government, quickly gained control of vast swaths of land in the Yucatan Peninsula—around the turn of the 20th century, North American companies controlled 800 thousand hectares of forest in Campeche.<sup>10</sup> Chicle itself is farmed by *chicleros* tapping sapodilla trees, using machetes to cut into the inner bark and drain chicle latex (Figure 6). The damage to the trees every year causes between 5 and 15% of them to die, making sapodilla farms difficult to maintain. This necessitated the venture of small camps of *chicleros* into the dense jungle in search of wild trees, a practice which proved remarkably conducive to the discovery of ancient Maya archaeological sites. Chicle harvesting takes hard work and expertise almost entirely held by the indigenous labor forces which foreign corporations employed, but predatory business practices by American companies ensured that these companies saw vast profits often at the expense of local people.<sup>11</sup> “La Chicleria” became a vast network of infrastructure, capital, and labor that entrenched American operations deep into the jungles of the Yucatan Peninsula.

Explorers like Gregory Mason relied on structures built and maintained by these American corporations to move through and explore Central America. Archaeologists and corporations were engaged in a symbiotic relationship—companies like the American Chicle Company provided

archaeologist-adventurers like Mason with resources and infrastructure, and archaeology projects and their associated media worked as a public relations campaign to justify and exalt U.S. economic presence in Central America.<sup>12</sup> Mason himself often expressed appreciation for the chewing-gum industry; he describes the Mason-Spinden Expedition as only being made possible by the gum industry’s growth in the region, and details using camps and trails established by the American Chicle Company during their exploration. Spinden, in his introduction to Mason’s book *Silver Cities of Yucatan*, gives thanks to the United Fruit Company and the Chicle Development Company “for advice in organization and...use of invaluable facilities in the field.”<sup>13</sup> *Chicleros* employed by these companies were also “naturalists, advisors, and guides to archaeologists” who often in their daily work “came across numerous archaeological sites under the cover of the jungle.”<sup>14</sup> Archaeologists and commercial interests were closely intertwined, as material extraction made inroads for excavations that in turn reframed the exploitative methods of chicle harvesting as helpful for the noble cause of discovery and preservation. A mutually beneficial endeavor, archaeological exploration provided a prestigious luster to the raw economic extraction of chicle, fruit, and mahogany companies. This positive feedback loop of economic exploitation and archaeological investigation spread American power and influence further and further into the region, solidifying the country’s imperial presence.

Archaeologists often saw the incursion of American corporations into the region as bringing needed industry and modernity. To them, partnership with corporations was an opportunity to bring both economic and intellectual development to Central American indigenous populations.

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<sup>9</sup> Mathews, Jennifer P., And Gillian P. Schultz. “The History of the Chewing Gum Industry in the Americas.” *Chicle: The Chewing Gum of the Americas, From the Ancient Maya to William Wrigley*, University of Arizona Press, 2009, pp. 42.

<sup>10</sup> Ibid, pp. 39.

<sup>11</sup> “U.S. companies enticed laborers with the promise of cash advances (sometimes paying more to those with experience), as well as providing clothing, food, and all supplies needed for tapping chicle in company stores. In Guatemala, companies gave *contratistas* (jobbers) credit to purchase large equipment, and they in turn would give cash advances to the *chicleros* to equip themselves. The jobber would also provide the workers’ families with monthly payments as well as supply the *chicleros* with medicine, food, and supplies during the working season. *Chicleros* had to sign a contract agreeing to provide a set amount of chicle latex for the season, from which the monthly payments and expenses would be deducted. Although some experienced workers profited under this system, others were exploited by paying high costs for supplies and taxes and suffered financial ruin.” Ibid, pp. 55.

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<sup>12</sup> The American Chicle Company was Mason’s most frequent corporate collaborator, probably owing to a personal relationship with the president of the company from 1922-1950, Thomas H. Blodgett.

<sup>13</sup> Mason, Gregory. *Silver Cities of Yucatan*. New York: G. P. Putnam’s Sons, 1927. Print. v.

<sup>14</sup> Mathews, Jennifer P., And Gillian P. Schultz. “The Chicleros.” *Chicle: The Chewing Gum of the Americas, From the Ancient Maya to William Wrigley*, University of Arizona Press, 2009, pp. 72–92. JSTOR, <https://doi.org/10.2307/j.ctv1smjwms.9>. Accessed 28 Sep. 2022. pg. 88.

In *Silver Cities of Yucatan*, Mason records a conversation that Spinden had with the governor of Quintana Roo:

“Spinden, who is much more practical than archaeologists are commonly supposed to be, delights Governor Garza by arguing that the development of a port and railroad in Northern Quintana Roo on the track of the steamers from New Orleans to Central America would make a hustling commercial state of what is now a wilderness inhabited by a few Indians who exist by hunting turkeys and chicle.”<sup>15</sup>

Mason also romanticizes the role of American corporations in Central America, implicitly crediting them with the intellectual advancement of Maya archaeology and implying that their work is providing a cultural service. He writes:

“In other cases the temples and palaces of the ‘silver cities’ of Yucatan and Guatemala are found by agents of other large American and British corporations than those interested in gum—that is, by men clearing the bush to plant bananas or by loggers cruising the primeval forest for mahogany. The wonderful buried past of America is literally being hewed—and chewed—out into daylight, where science may have a look at it.”<sup>16</sup>

Mason’s optimistic vocabulary here expresses appreciation for mechanisms of American imperial and extractive power in the Yucatan Peninsula. To him, they have been able to bring the culture of the Maya out of the darkness of ignorance that he implies it has been kept in by the supposedly apathetic indigenous population, and into the bright light of American scientific discovery. To Mason, industry’s assistance to and enabling of Maya archaeology was instrumental in clearing the way for archaeological breakthroughs and societal advancement of modern Maya.

American archaeologists brought their belief in American exceptionalism and the transformative power of modern capitalism to Central America, wanting to remake the region in what they saw as the ideal image. Adopting a paternalistic attitude toward who they saw as a

“backwards” population of modern Maya, they believed that they were preserving the ancient Maya past while bringing their modern descendants into the future with help from American capital. This ambition was embodied and intensified by the corporate entities that entrenched themselves into Central America. Seeking lucrative natural resources, they established infrastructure that enabled the exploitation of the environment and the indigenous people onto whose homelands they encroached. It was chicle, chicleros, and American corporations that made archaeology in Central America possible through vast networks of power that were made navigable for explorers and other intellectual interests. Economic imperialism perpetrated by the United States in the 1920s and 30s in the Yucatan Peninsula, through its ties to the Maya, provided the mechanisms by which archaeological and intellectual institutions operated.

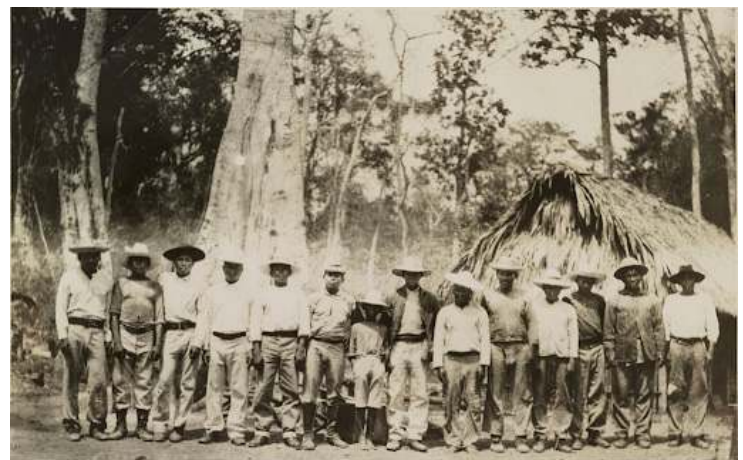


Figure 6: Indigenous Mexican *chicleros* in their camp. Photograph by Underwood & Underwood, circa April 1923. United States Library of Congress.

### III. The Museum Institution

Intellectual interest in the Maya as an ancient civilization grew rapidly in the early 20th century, alongside the rise of formal museums. Museums and universities all wanted to acquire Maya art, architecture, and cultural objects to add to their collections. Using archaeologists like Gregory Mason as agents, they engaged in a complex system of site discovery, excavation, and artifact extraction that worked to siphon knowledge, culture, and power away from modern indigenous Maya and into the sterile marble halls of American cultural institutions. Expeditions evolved to become not only academic and exploratory, but also extractive in purpose.

<sup>15</sup> Mason, Gregory. *Silver Cities of Yucatan*. New York: G. P. Putnam’s Sons, 1927. Print. v.

<sup>16</sup> Mason, Gregory. “America’s Buried Past.” *The Saturday Evening Post*, January 19, 1929. 37.

Using trails, mules, and capital from chic companies, archaeologists with the financial backing of museums uncovered sites, blocked them off, dug them up, and shipped hundreds of pieces of Maya culture out of Central America. In doing so, museums denied the modern Maya ownership of the culture of their ancestors and excluded them from the creation of a cultural narrative, allowing America to assert intellectual imperial dominance. Though contributing to academic cultural understanding of the ancient Maya and the development of the field of Maya archaeology, practices of museums and the archaeologists they employed also often served the American imperial goal of dismissing the modern Maya and taking possession of the venerated culture of their ancient ancestors, literally and metaphorically.

Artifacts were the currency of museums in the early 20th century. As they worked to expand their collections, museums engaged archaeologists as their prime movers, offering to sponsor expeditions with the expectation that any artifacts uncovered would be brought back to them stateside. Gregory Mason was one of the most popular of these explorer-extractors due to his close relationship with many of the heads of prominent museums and the frequency with which he entered the Yucatan Peninsula in the 1920s and 30s. Under direct patronage and instruction of American museums like the Museum of the American Indian or the Peabody Museum, Mason returned several times to the region for the sole purpose of buying, selling, or excavating potential additions to museum collections. Mason discusses in a letter with George Heye, the director of the Museum of the American Indian, the purchase by the museum of artifacts Mason had gotten word of and their transportation back to his New York collection. His writing implies he was under orders for specific things for the museum—he apologizes for being unable to acquire any white marble vases, which are apparently popular—and writes “... if you do not instruct me to the contrary I shall simply keep on trying to get the things which you want most and failing that, get the next best thing to them.”<sup>17</sup> Notably, Mason and his wife conducted an expedition for the National Museum of the American Indian and the

<sup>17</sup> Letter from Dr. George G. Heye to Gregory Mason, April 24, 1932. Gregory Mason Papers, Williams College Special Collections.

Haye Foundation in 1932, where they brought a large body of artifacts from northern Honduras back to Washington, D.C. which still reside in the museum’s collections (Figure 7). One of Mason’s more well-known acquisition stories, that of the Kagaba mask, also came about because he was under specific instruction to acquire Central American indigenous masks for the Museum of the American Indian.<sup>18</sup> These instructions often focused on objects like marble vases that evoked Western standards of quality and sophistication, or were so exotic and “new” that it was as if they had never been seen before. American institutions valued original artifacts and were looking to curate collections from Central America, reflecting its emerging popularity as a exotic, ancient, and mysterious region.

As archaeologists like Mason became in part brokers and authenticators, artifacts and Maya monuments acquired a dollar valuation. The new commodification of archaeological



Figure 7a: Part of an article in The New York Times detailing Mason’s 1932 expedition to Honduras for the Museum of the American Indian, Heye Foundation, featuring artifacts now in the museum collection. 1932.

<sup>18</sup> This story is one that was a frequent keynote for Mason’s retellings of his adventures in Central America in lectures and talks, and will be elaborated on in the next section.



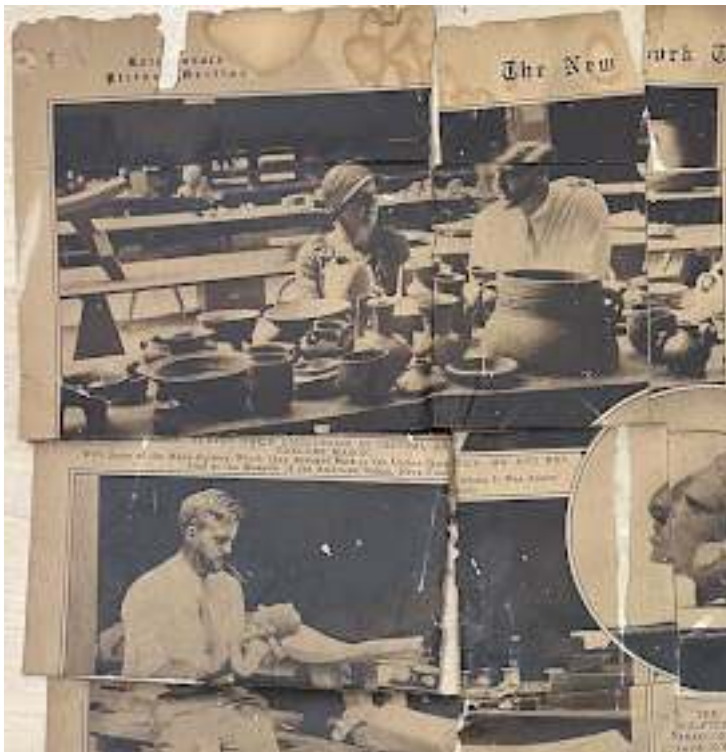


Figure 7b: The same article, but an original copy found and re-pieced together in the Williams College Special Collections, 2022.

objects and the commercialization of museum institutions meant that Mason's work took on more of an extractive approach to cater to these emerging capitalist frameworks within archaeology. Mason currently has, from just one expedition to Colombia in 1932, 286 original objects attributed to him in the Penn Museum.<sup>19</sup> It becomes difficult to justify this level of extraction under purely academic interest, raising questions about other forces driving early 20th century archaeology. This scale of acquisition reflects the acceleration of archaeological interest in the region, and the transformation of the archaeological object into both something of intellectual interest and an expression of American power. Through these objects, U.S. institutions became keepers and controllers of another culture and history. Most if not all of Mason's objects are relegated today to archives and backrooms, becoming more of a loss for the people of Central America than a gain for the United States. The motivation of museums in this period seems to have

stemmed more from the ability to acquire the object and possess another culture and history than about learning—with the amount of unutilized excess, quantity over quality seems to have been the ruling order. This imperial process of extraction was primarily a collaborative effort between economic interests and intellectual institutions, encouraging the seizure of all types of Central American resources for the United States's benefit.

#### IV. “First Families of America”: The Maya & American Intellectual Imperialism

Alongside his career as an archaeologist working with museum institutions, Gregory Mason was a prolific journalist, and arguably one of the first to combine popular journalism and scientific writing into a “popular archaeology.” Writing numerous books and articles and giving lectures about the ancient Maya and his experiences in Central America, Mason became one of the primary conduits through which the American public learned about the ancient Maya. His place as the lynchpin between academic and public archaeological discourse gave Mason enormous influence to shape the narrative about the Maya in the public sphere. He used this power to educate and excite the public, but also to benefit the chicle companies and museums who sponsored him. Through his writing, he worked to justify American intellectual, archaeological, and economic imperial expansion into Central America and the extractive and exploitative policies that enabled that process. Almost a form of American propaganda, Mason's writing created a single, cohesive narrative that connected these systems of power and presented them positively to the American public. Mason's writings about his archaeological exploits varied wildly, from accounts of moments from expeditions, analysis of artifacts, and interpretations of ancient and modern Maya culture. It all, however, followed a core thread of both ancient Mayan and American exceptionalism, and a full endorsement of American activities in Central America. His most important contribution to the American conversation about the Maya was his belief that the Maya were the “First Families of America.” It was this label that served a myriad of purposes. It connected the ancient Maya and their exceptional advancements to the modern United States, created an ancient American past to intellectually rival Europe's Greeks and Romans, gave America a reason to be interested in and collect Maya artifacts, and

<sup>19</sup> Penn Museum. Colombian Expedition, Gregory Mason, 1932 Accession Lot. Web.

dismissed the modern Maya's viability as keepers of their own culture.

#### a. "First Families"

Gregory Mason was seemingly the first person to use the phrase "First Families of America" or "First Families" in reference to the ancient Maya.<sup>20</sup> He creates a connection between "the most highly civilized of any of the ancient dwellers of the two Americas" and his own country to make a case for U.S. influence in Central America.<sup>21</sup> By portraying the ancient Maya as the ancestors of modern Americans, Mason positioned them as the progenitors of American exceptionalism. Calling them the "foster-ancestors" of the United States and "America's First Families" created a familial relationship between Americans and ancient Maya that explained the need for the United States to exert power in the region for what Mason believed to be the good of the common people of the Americas.<sup>22</sup> By naming them his "foster-ancestors", Mason adopts the Maya, simultaneously justifying through a paternalistic duty both intervention in Central America and writing the modern Maya out of the genealogy.

Mason writes that there are "beauties of American antiquity in Yucatan" that the more educated, appreciative Americans in the U.S. have the responsibility to find and protect as part of their ancestry.<sup>23</sup> He conflates the larger American continent with the United States, reinforcing the U.S.'s perceived hegemony in the region. Claiming these antiquities as "the buried past of America" as a whole, and not of the modern Maya, Mason asserts that they are American property which the U.S. has a right to extract. The U.S. is more suited to "preserve" or "protect" these cultural objects as the better, more knowledgeable, and more deserving heir to this ancient culture. By unmooring the modern Maya from their ancient culture, the United States could act as though the ancient Maya artifacts and sites sat abandoned, making their extractive policies a

natural expansion of American power into an unoccupied frontier. As the most dominant power in the Western Hemisphere in the early 20th century, it was only logical that America's "protectorate" of modern Central America would extend into the past.

#### b. Ancient Maya, Modern America

Gregory Mason's early 20th century anthropological writing seeks to slot the Maya into humanity's progressive path to modernity that culminates in industrial, modern, Western society. He does this by depicting the Maya and their achievements as the origins of American industry: not only are the Maya involved in America's past, but they can be seen in its present. He alleges that the ancient Maya should be credited for skyscrapers: "...[their] development of an original style of architecture characterized by the dominance of vertical rather than horizontal surfaces—[is] an architecture whose possibilities for the crowded cities of the United States are being utilized by an increasing number of our own architects." He praises their intellectual, spiritual, agricultural, and technological achievements, writing that in many ways "life among the Maya presented resemblances to life in the United States today." He uses modern American concepts to describe Maya achievements—in an article titled "1000 Years Before Columbus," the byline states that "Ancient America was already a land of business men, recent archeological discoveries show, with well-developed industries, good roads and fleets of merchant ships that carried the products of the Mayas and Incas over an industrial land" (Figure 8). Mason connected Maya industry to American industry, imbuing their ancient culture with ideas of capitalism and technology to connect them as the natural progenitors of 20th century American society (Figure 9). Connecting the ancient Maya culture to modern America further established a connection between the two peoples, allowing 20th century Americans to replace modern Maya as the rightful heirs to the Maya culture. This twofold erasure and replacement created a reality in

<sup>20</sup> Mason, Gregory. "Cities That Passed in a Night: New Light on the Tragic History of the Mayas". Extract from *World To-day*, London, April 1927. 481.

<sup>21</sup> "Mayan Explorers Face Jungle Peril". *The New York Times*, 5 Jan, 1926. pg. 5.

<sup>22</sup> Mason, Gregory. "Cities That Passed in a Night: New Light on the Tragic History of the Mayas". 481.

<sup>23</sup> Mason, Gregory. "America's 'Egypt' in the Maya Cities of Yucatan." *The New York Times*. May 23, 1926.

<sup>24</sup> Mason, Gregory. "Cities That Passed in a Night: New Light on the Tragic History of the Mayas". Extract from *World To-day*, London, April 1927. 481.

<sup>25</sup> "Mayan Explorers Face Jungle Peril". *The New York Times*, 5 Jan, 1926. pg. 5.

which American claims to resources and material culture of Central America became justifiable.



Figure 8: The headline of an article written by Mason entitled “1000 Years Before Columbus.” Notable quotes include the image caption: “A modern Maya and some of the settlements of today. Both form a sorry contrast with the past” and the byline: “Ancient America Was Already a Land of Business Men, Recent Archaeological Discoveries Show...”. Date unknown. Williams College Special Collections.

a. “First Families”

Gregory Mason existed at “the crosscurrents of institutional, scholarly, and popular interest in ancient civilizations of the New World”: the economic, intellectual, and journalistic elements of his career reflected the entangled web of interactions and institutions at the heart of U.S.-Central American relations of the

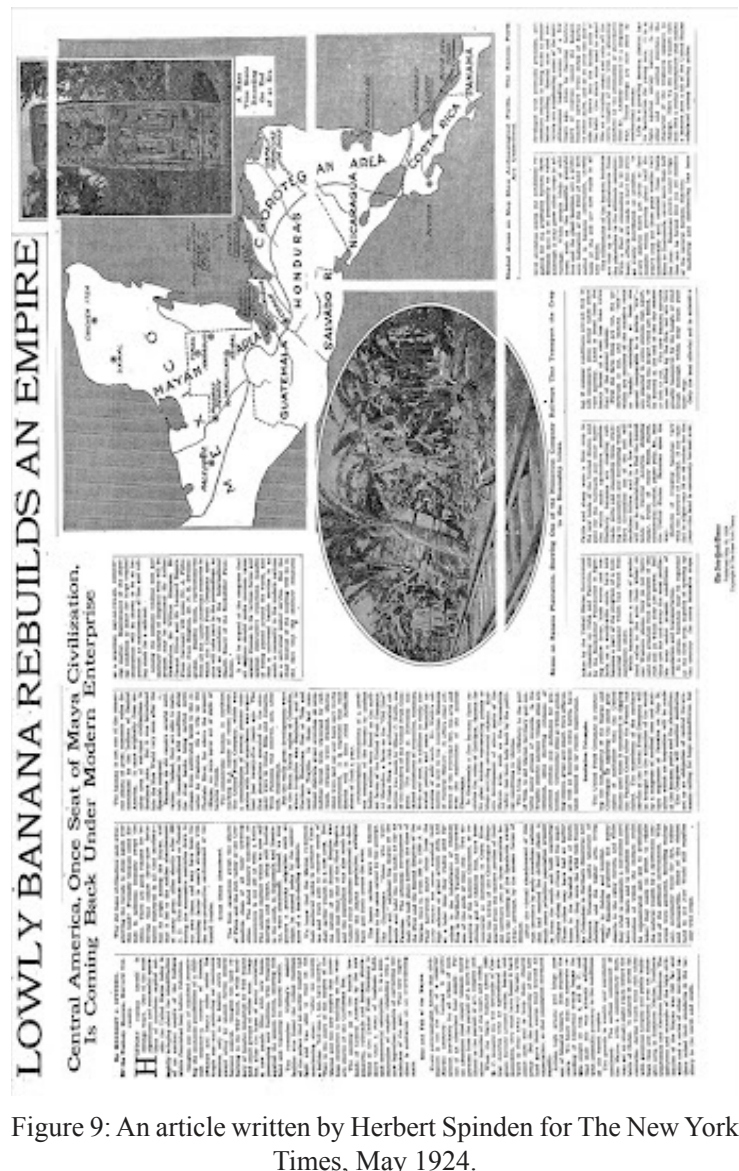


Figure 9: An article written by Herbert Spinden for The New York Times, May 1924.

period.<sup>26</sup> Mason’s writing and his work as a whole was characterized by a complicated network of elements: connections to museum institutions and chicle companies, sensational accounts of expeditions, and undertones of American intellectual imperialism and exceptionalism. At the heart of his vast quantity of archaeological writing, however, was his commitment to “man’s perpetual quest to find out where he has come from and what it

<sup>26</sup> Wren, L. and Nygrad, T. (2015). “The State of Research in the Coahuah Region of Quintana Roo”. *The Maya of the Coahuah Region: Archaeological and Ethnographic Perspectives on the Northern Lowlands* (ed. Justine M. Shaw). University of New Mexico Press, Albuquerque. 24.

is all about.”<sup>27</sup> Gregory Mason believed that the answers to this deeper question that he had been pondering his entire career could come from the ancient Maya. He was, to his credit, a firm proponent of the significance of their achievements, and made an effort to depict the ancient Maya not as savages but innovators to the larger American public. As an explorer, he uncovered important new sites that contributed to new understandings of ancient Maya culture in his time. As a writer, he celebrated the astronomy, industry, art, and architecture of the Maya to a wide audience, providing the general population with a positive portrait of what was to him a wondrous ancient Central American people. His journalism, in the form of “popular archaeology,” was key to the establishment of the Maya in public American consciousness and the advancement of the archaeological discipline. He deserves recognition as a prime mover in the field of Maya archaeology in the early twentieth century.

Mason’s career, however, was situated within a complex web of power that spanned two countries and multiple disciplines. The United States and Central America were connected socially, intellectually, and economically as America made increasingly intense incursions into the Yucatan Peninsula in search of natural resources and Maya artifacts. The driving force behind American imperialism in Central America in the first half of the 20th century was an interconnected triangle of archaeology, intellectual institutions, and corporate interests. In an ever-intensifying cycle, museums provided funding and prestige for archaeologists, who retrieved artifacts and won clout for their institutional backers. Chicle companies provided infrastructure and capital for both museums and archaeologists, and in return archaeologists provided public relations that supported American corporate interests in Central America. Journalism created a connection between the ancient Maya and modern America, dismissing their modern descendants despite their contributions to the American archaeological project and creating a gap in the perceived line of historical progress for American institutions to fill. The cooperation of these forces created a system that sustained American influence in the region through infrastructure creation, extraction

of resources, exploitation of local populations, and the manufacturing and molding of American public interest. The history of Maya archaeology cannot be fully understood without consideration of these mechanisms.

Archaeology should be recognized as an influential component of American imperial strategy, and archaeologists should acknowledge the larger economic and social mechanisms that have influenced and continue to affect their intellectual work. Though archaeological practice has significantly evolved since the early 20th century, hundreds of objects acquired by Gregory Mason still sit today in American museum collections. While the ancient Maya received recognition, their descendants were denied ownership of their culture, both materially and intellectually. Making the modern Maya a people without a history made it possible to co-opt their past, dismiss their present, and restrict their future. American infrastructure and power in the region and perceptions of the Maya as a diminished people, created and maintained through the triangular intellectual-archaeological-economic relationship, continued to enable the exploitation of the Yucatan by the U.S. well into the 20th century and continue to have ramifications today. This should not fully diminish, however, the achievement and work of those like Gregory Mason in the early days of the discipline. Archaeology can maintain the spirit of exploration, discovery, and cultural appreciation instilled in its foundations while taking lessons from the past to be more thoughtful and intentional about its execution.

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<sup>27</sup> Mason, Gregory. “America’s Buried Past.” *The Saturday Evening Post*, January 19, 1929. 38.

## Investigation of Mechanisms Mediating Microbial Survival, Abundance, and Pathogenicity Within Gut Microbiota

AbuBakr Sangare '23

### Abstract

Abstract: The human gut microbiome is an incredibly diverse and populous environment rich with an estimated  $10^{13}$  to  $10^{14}$  microorganisms inhabiting the gastrointestinal tract (Gill et al., 2006). The aggregate membership of these microorganisms construct a dynamic “supraorganism” whose symbiosis, or lack thereof, with the respective human host can heavily influence human health (Kelsen and Wu, 2012). Interactions between the host and commensal bacteria native to the gut microbiome can be described as commensalism, symbiosis, and/or pathogenicity—pending on the specific context of analysis (Hooper and Gordon, 2001). These prokaryotes have the capability to synthesize metabolites, lipids, and vitamins otherwise inaccessible to the host’s eukaryotic cells (Kelsen and Wu, 2012). Most notably, dysbiosis of the gut microbiome has been associated with many disorders and diseases (Rinninella et al., 2019). Recently, studies have outlined a significant role of the gut microbiome and Multiple Sclerosis (Maghzi and Weiner, 2020). This proposal aims to describe and outline a study exploring microbial dynamics within the gut microbiome as it relates to the mechanisms bacteria employ to both survive and thrive with relative abundance. This study will provide insights into mechanisms mediating the prevalence of certain bacterial communities, and insights into the potential role mimicry may have in the pathogenicity of Multiple Sclerosis. Leveraging the findings of these studies will have significant implications on human health by better understanding mechanisms underpinning crucial interactions between hosts and their most intimate gut microbial neighbors.

### The Gut Microbiome: What Makes it Extreme?

The human gastrointestinal tract is an incredibly complex system with many interesting characteristics. Quite interestingly, bacteria that thrive and survive within the gut microbiome have adapted many mechanisms in

response to the environment they exist in (Gomez et al., 2019). The gut microbiome is home to a diverse array of bacterial strains ranging, predominantly, from the phyla Actinobacteria, Firmicutes, Bacteroidetes, Proteobacteria, Fusobacteria, and Verrucomicrobia—with bacteria of the phyla Firmicutes and Bacteroidetes representing 90% of gut microbiota (Arumugam et al., 2017). Obligate anaerobes dominate within the gut, despite the presence of facultative anaerobic and aerobic bacteria (Shin et al., 2019).

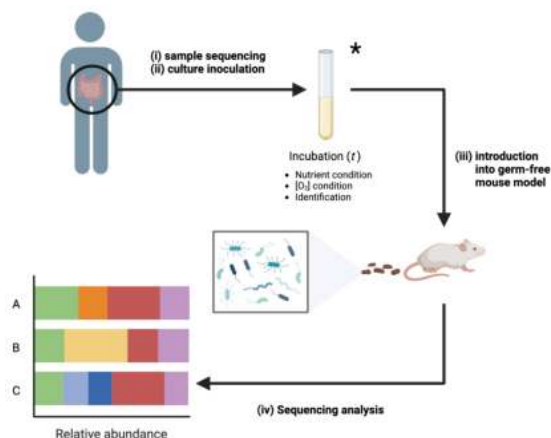
With respect to the gut, these microbes are faced with a wide range of environmental stressors and challenges. Within the intestinal tract itself, pH varies from roughly 6 in the small intestine to roughly 7.4 in the terminal ileum and even 5.7 in the cecum, and ultimately reaching approximately 6.7 in the rectum (Fallingborg, 1999). In tandem with severe differences in environmental pH, in order for successful colonization, bacteria must overcome chemical barriers such as low oxygen concentrations and redox potential, as well as host physiological barriers such as gut architecture and peristalsis (de Vos et al., 2022). A healthy gut microbiome is a diverse gut microbiome—dysbiosis within the gut microbiome is associated with a wide range of gastrointestinal diseases and disorders (Rinninella et al., 2019). Gut microbiota interact quite significantly with the host’s immune system and have been associated with immune responses linked to neurological diseases, most notably the immune-mediated neurodegenerative disease Multiple Sclerosis (MS) (Elsayed et al., 2022). In animal models of MS, experimental autoimmune encephalomyelitis (EAE), animals exposed to a strains *Erysipelotrichaceae* (OTU002) and *Lactobacillus reuteri*, a member of the Firmicutes Phylum, exhibited increased progression of the disease through suspected molecular mimicry to the host’s myelin oligodendrocyte glycoprotein (MOG) (Maghzi and Weiner, 2020 and Mu et al., 2018).

## Fundamental Questions

What mechanisms, and characteristics adaptations favor successful survival and prevalence in the microbiome? The aims of this proposal are rooted in broad underlying factors influencing community diversity of gut microbial communities (aim 1) and investigating the prevalence and effects of gut microbial mimicry on the host (aim 2).

### Aim 1. Understanding population dynamics that favor bacterial dysbiosis

In strains of *E. coli*, increased microbial diversity and evolution has previously been reported when strains were allowed to grow for an extended period of time (Finkel and Kolter, 1999, Fig.1). While many robust studies of *E. coli* have elucidated significant factors influencing population-level dynamism, such in-depth studies of these ecological principles in the gut have not been reported (Rudi and Zhao, 2021). This aim will be pursued, largely, by inspecting cultures of bacteria, inoculated from human stool samples (including individuals who are diagnosed with MS), and analyzing the changes in percent composition over a period of time ( $t$ ). Nutrient conditions will be altered to mimic the relative abundance in face of certain nutrient types (e.g. high sugar concentrations versus high carbohydrate concentrations to artificially mimic the effects diet may have on relative strain abundance).



**Figure 1.** Workflow diagram of in vivo and in vitro analyses. After bacteria are collected from human stool samples, they will be subsequently sequenced and inoculated in liquid cultures. After which, they will be incubated for 30 days under different nutrient and oxygen-level conditions and introduced into mice models. As denoted (\*), small aliquots of the liquid cultures will be sent for sequencing analysis after each day (without introduction into mice models) and the relative population abundance will be tracked.

In tandem with *in vitro* studies, *in vivo* approaches will also be employed using germ-free mice model systems. After identifying strains who exhibit a high degree of competitiveness, survival, and prevalence in liquid cultures, these strains will be engrafted into mice containing no gut microbiome (i.e. germ-free), stool samples will be collected to observe changes, if any, in population composition (Figure 1)—while specifically tracking the relative abundance of *L. reuteri*.

While difficult to predict which strains and bacterial species will fluctuate over the course of the experiment, we hypothesize that there will be some level of community homeostasis achieved whereby populations reach equilibrium at some distinct time point. The results from this study will lay foundational knowledge in understanding how to engineer the human gut microbiome by characterizing factors that may influence favorable population dynamism between strains. These findings will also support a correlation, if any at all, with *L. reuteri* and MS versus non-MS individuals. As this experiment is rooted in population-level changes, an interesting shift towards a strain-specific approach may reveal interesting factors that contribute to successful survival at the transcriptomic level — exploring if there are certain genes of which expression pattern changes yield increased community prevalence.

### Aim 2. Profiling and characterization of *L. reuteri* host mimicry protein in MS versus non-MS individuals

Germ-free animals co-colonized with OTU0002 and *L. reuteri* have been demonstrated to display intense synergistic progression of EAE through an enhanced T helper 17 cell (Th17) response and molecular mimicry to myelin oligodendrocyte glycoprotein (MOG), respectively (Maghzi and Weiner, 2020). Interestingly, *L. reuteri* the protein exhibiting mimicry with MOG is UvrA (Maghzi and Weiner, 2020). UvrA is cross-reactive with MOG-specific CD4 T cells that, in tandem with the Th17 response, cause demyelination of the Central Nervous System (Maghzi and Weiner, 2020). UvrA is a well-characterized component of the nucleotide excision repair mechanism and has been demonstrated to aide in survival of the facultative anaerobe *Bacillus subtilis* when exposed to stressors such as UV-exposure (Smith et al., 2002, Figure 1). To better characterize the potential link of UvrA and MS *L. reuteri* strains will be isolated from both MS and non-MS individual stool samples and perform western

blot analysis to assess levels of UvrA. The lysed samples will be transferred to a membrane, after being ran on an SDS-PAGE gel, use anti-uvrA antibodies (Abs) with a secondary Ab, containing a fluorescent reporter, to quantitatively and visually measure changes in UvrA levels between the two groups. While not certain, increased levels of UvrA in patients with MS would likely be observed, operating under the hypothesis linking it to the disease. Further experimentation would include *in vitro* competition experiments to explore if strains containing hyperactive UvrA perform better than their knockout counterparts long term (following a similar experimental setup Figure 1). To further assess the inducibility of increased UvrA production, multiple *L. reuteri* strains will be collected and isolated, grown under an array of nutrient conditions, and analyzed via western analyses as mentioned above. 3 liquid culture growth conditions, *+sugar*, *+fat*, and *-nutrient*, will be tested in addition to a 4th control condition to artificially mimic dietary conditions. *+sugar* and *+fat* have an increased concentration of sugars and fats, respectively, to mimic dietary trends. *-nutrient* will have a decreased concentration of readily available nutrients to mimic starvation (in context, an individual with an eating disorder or who engages in intermittent fasting). While unable to assess the *+sugar* and *+fat* conditions, as UvrA acts as a DNA repair mechanism, it is expected that the *-nutrient* growth condition will likely have a decreased amount of UvrA abundance when compared to the control on the basis of energy likely being shunted to mechanisms only crucial for survival (ex. metabolism and anabolism), rather than DNA repair. Implications of this study lie heavily in the potential impacts of behavioral patterns of individuals with MS by providing insights into dietary effects of UvrA protein abundance from *L. reuteri*.

### Concluding Remarks

The results produced by these experiments would not only provide information on the effects an individual's diet has on their gut microbiome, but they could also provide insight on how the microbiome's journey back to homeostasis can lead to microbial diversity. Bacterial strains that are deemed beneficial in certain diet conditions could be isolated and further researched for implementation into the gut microbiome of individuals whose gut microbiomes are unable to adapt to their diets. Furthermore, research

into the journey towards homeostasis in the gut microbiome could uncover "areas of concern" with the bacteria within individuals with bacteria dysbiosis, gastrointestinal diseases caused by an imbalance in the gut microbiome. Elucidating the potential connection between mimicry and MS will also provide novel insights into the molecular mechanisms underlying its causes.

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## Double-Faced Wagers: Exchange Coffeehouses in Post-Revolution England

Wes Morrison '26

In his monumental work *The Structural Transformation of the Public Sphere*, Jürgen Habermas cites the coffeehouse as a key social space in the development of a public sphere in Early Modern England, with open discourse, news dissemination, and intellectual discussion paving the way for Enlightenment thought and popular scrutiny of state authority.<sup>1</sup> While this image of the coffeehouse as a democratizing force may seem rosy, the impact of 17th - century financial innovations on the coffeehouse tells a more complicated story. Throughout the Early Modern period, growing urbanization enabled the rise of a diverse group of professionals and tradespeople comprising the middle class, as well as the rise of coffeehouses in urban centers like London in the 1650s.<sup>2</sup> The proliferation of the coffeehouse in England coincided with the Glorious Revolution, in which the protestant Dutch stadtholder William of Orange and his wife Mary were invited by parliament to depose James II and the Catholic Stuart dynasty.<sup>3</sup> In addition to promoting constitutionalism through a bill of rights, William supported a series of financial innovations like the Bank of England, joint-stock companies, and robust property rights, known as the Financial Revolution, which contributed to the upward mobility of the urban middle class.<sup>4</sup>

These financial policies, as well as tax policies intended to help fund English wars, were largely constructed and administered by the Whigs, a liberal party devoted to free trade and sympathetic to the middle-class.<sup>5</sup> One consequence of this new financial regime was stock-jobbing, or the networking of investors to different stocks, a trade which proliferated in the crowded coffeehouses surrounding the London Stock Exchange, primarily Garraway's and Jonathan's.<sup>6</sup> How supportive were these coffeehouses and the Habermasian public sphere of this financial system and the rising middle class? While public commentary on finance in the coffeehouse focuses primarily on its vices, the extensive documentation of bourgeois gambling, speculation, and examples of Whig political economy within these satires demonstrates the importance of the coffeehouse as both an agent for and a reflection of finance and liberalism in post-Revolution England. Furthermore, the distinct division between financial coffeehouse culture and public views on such activities challenges the notion that coffeehouses were uniform in promoting a democratic public sphere.

Speculative ventures and avenues for class mobility, while largely depicted as baseless and unproductive, figured heavily into coffeehouse culture, demonstrating the importance of this institution in promoting finance and liberalism in England. One example of coffeehouse finance is found in the 1720 farcical comedy *Exchange-Alley*, which the unknown author dedicates to “the Gentlemen daily attending at Jonathan's Coffee-House.”<sup>7</sup>

<sup>1</sup> Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Enquiry into a Category of Bourgeois Society*. (The M.I.T. Press, 1991), 30 - 35.

<sup>2</sup> Peter Temin and Hans-Joachim Voth, *Prometheus Shackled: Goldsmith Banks and England's Financial Revolution after 1700*, (Oxford University Press, 2013), 12 - 22. Phil Withington, “Where Was the Coffee in Early Modern England?” *The Journal of Modern History* 92, no. 1 (2020): 40–75.

<sup>3</sup> Niall Ferguson. *The Ascent of Money: a Financial History of the World / Niall Ferguson*. (New York: Penguin Press, 2008), 75.

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<sup>6</sup> Cowan, Brian. *Social Life of Coffee - The Emergence of the British Coffeehouse*. (Yale University Press, 2011), 192.

<sup>7</sup> *Exchange-Alley: or, the stock-jobber turn'd gentleman; with the humours of our modern projectors. A tragi-comical farce. Humbly Inscrib'd To the Gentlemen daily attending at Jonathan's Coffee-House*. (London: printed for T. Bickerton, at the Crown in Pater-Noster Row, 1720), 1 - 38.

The preface to the piece includes the observation that “if you are at a Coffee-House, the only conversation turns on the Stocks.”<sup>8</sup> While the author’s comments are intended simply to preface the exaggerated satire that follows, they also connect these farcical scenes to the reality of the coffeehouse, cautioning readers against speculative schemes and the coffeehouses in which they proliferate. The five scenes center around characters named “Bubble,” “Mississippi,” “Cheat-All,” and “Crave-More,” with the former two intended to mock the speculative schemes of the time, and the latter intended to disparage the deceptive brokers and stock-jobbers operating in Jonathan’s coffeehouse.<sup>9</sup> Furthermore, the farce depicts everyday activities in Jonathan’s with scenes of stock purchases and speculation on “insurance from Cuckoldom” and “noses insur’d from fire,” demonstrating the author’s view that finance in the coffeehouse is relegated only to fools and swindlers.<sup>10</sup> The basic plot is that Miranda, daughter to Mississippi, is intended to marry the newly-affluent and thus more “agreeable” Africanus, whom she realizes in the final scene is actually a beast who only earned his gentlemanly status through stock-jobbery.<sup>11</sup> Further mockery of economically mobile individuals is found with Africanus’s company of fellow new-gentry beasts, one of whom is a monkey who was previously a “journey-man Taylor.”<sup>12</sup> While these depictions of financially self-advancing and nominally middle-class individuals as brutish animals demonstrate the negative views of farcical authors surrounding finance, the mere existence of this mockery indicates that this was indeed a trend that was – to some extent – pervaded through the coffeehouse. Further evidence of these trends within the coffeehouse is found in Arthur Murphy’s satirical periodical *The Gray’s-Inn Journal*, in which Jonathan’s is once again home to nefarious and immoral stock-jobbers, this time primarily depicted as Jews and newly-minted gentry exaggeratedly clamoring over their finances.<sup>13</sup> While this offensive portrayal of stock-jobbers is meant

to be demeaning, the country-gentleman who bemoans taxation and the “Infernal leeches” that engage in stock trading is portrayed mainly as the protagonist of the story.<sup>14</sup> This lop-sided comparison comes down heavily on finance, but also highlights the financial nature of the coffeehouse through its satirical narrative structure. Despite the common disparaging of speculation, stock-trading, and economic mobility among these authors, their farcical works demonstrate a fundamental assumption that these phenomena not only existed within, but were proliferated by exchange coffeehouses.

Another vice featured heavily in public discourse was the bourgeois habit of gambling, illustrating the link between the coffeehouse and growing wealth generated by finance. For instance, Temin and Voth view Hogarth’s *A Rake’s Progress* plate six, in which newly-wealthy Tom Rakewell piddles his money away in White’s coffeehouse and gambling den, as a warning for the rising middle-class against irresponsible forms of finance.<sup>15</sup> This depiction of White’s coffeehouse as the bane of the new-Gentry is clearly negative, but beyond a moral critique it also demonstrates how they would use their newfound wealth and status through new forms of middle-class recreation, indicating that the social space of the coffeehouse played many financial roles both in middle-class wealth accumulation and expenditure. Additionally, Cowan asserts that White’s was a haven for the “Whig aristocracy,” indicating further connections between gambling-centered coffeehouses and post-Revolution financial reforms.<sup>16</sup> Furthermore, the satirical dialogue *The Art of Getting Money by Double-Fac’d Wagers*, once again set in Jonathan’s coffeehouse, depicts a citizen placing bets on the outcome of an ongoing siege in Belgium, and a swindler hoping to profit from the unfortunate situation.<sup>17</sup> The satire seeks to deride gambling and profit-seeking within the coffeehouse, and since wagering on a siege in which the lives of English soldiers were at stake was considered

<sup>8</sup> *Exchange-Alley*, 1 - 5.

<sup>9</sup> *Exchange-Alley*, 1 - 5.

<sup>10</sup> *Exchange-Alley*, 13 - 16.

<sup>11</sup> *Exchange-Alley*, 1 - 38.

<sup>12</sup> *Exchange-Alley*, 32 - 33.

<sup>13</sup> Arthur Murphy. *The gray’s-Inn Journal. In two volumes.* ... Vol. 2. London: printed by W. Faden, for P. Vaillant, in the Strand, MDCCLVI. (1756), 29 - 34.

<sup>14</sup> Murphy, *The gray’s-Inn Journal*, 29 - 34.

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<sup>17</sup> *The Art of Getting Money by Double-Fac’d Wagers, Or, Cross and Pile Whether Mons be Taken, Or no? a Dialogue between a Courtier, a Citizen, and a Sharper of the Town : The Scene, Jonathan’s Coffee-House,* (London: 1691), 1 - 4.

morally questionable at the time, this exaggerated situation can be read as a critique of the coffeehouse-going middle classes and their novel forms of financial accumulation and recreation.<sup>18</sup> This social concern surrounding the coffeehouse reflects the growing power of the middle class during this era, and also indicates a divide between the public perception of finance and the actual socio-economic shifts seen in the coffeehouse.

As representatives of the new liberal regime of free-trade and finance, the presence of Whiggish economic thought in exchange coffeehouses was largely lambasted in public media, proving that these institutions were havens of Whig finance. Published in 1701 by Tory politician and ardent Mercantilist Charles Davenant, the satirical piece *The True Picture of a Modern Whig* depicts a meeting at Garraway's exchange coffeehouse between Mr. Whiglove and Mr. Double.<sup>19</sup> Meant to stereotype Whig party members of the post-Revolution era, the two characters describe Whig policies as pursuing financial self-interest and profit, even if they must sell out king, country, and the public good.<sup>20</sup> Aside from Whig plots allowing France to become a hegemonic power, further examples of their schemes for self-enrichment include war profiteering, public lending to the government, and excessive taxation, all serving to "run the Nation over Head and Ears in debt."<sup>21</sup> In addition to mockery and exaggeration of specific Whig policies, the piece also takes aim at the urban middle-class, with Mr. Double describing how he gained his fortune despite being the son of a shoemaker, and his friends "have got much better Fortunes since the Revolution, and from as poor Beginnings."<sup>22</sup> By associating the economic mobility of the middle-class with the post-Revolution financial reforms of the Whigs, Davenant takes a strongly anti-finance position, while also inherently demonstrating the importance of coffeehouses like Garraway's in facilitating discourse among Whig-adjacent figures and

groups.<sup>23</sup> Such anti-coffeehouse sentiments are also evident in Daniel Defoe's essay on the influence of stock-jobbing in Parliament, in which he remarks that "Country Gentlemen may sit at Home; and only Corresponding with the Brokers at Jonathan's and Garraway's, as the Prices Rise or Fall, they may dispose of their interests in the Towns they can Govern, at as good a rate as they can."<sup>24</sup> Defoe sees the financial role of exchange coffeehouses as a key factor in growing parliamentary corruption, and considering this piece is not a satire but an essay by an influential social commentator of the era, his observations are perhaps more reflective of the reality of finance as a major element in post-Revolutionary coffeehouses.<sup>25</sup> Furthermore, Defoe argues that England would become weaker and more vulnerable to French invasion "if the great Affairs of the kingdom concerted in Parliament should come to be prepar'd, manag'd, and byass'd at Garraway's and Jonathan's Coffee-house, and expos'd to Sale by a parcel of Stock-Jobbers."<sup>26</sup> Defoe's concern over the growing influence of exchange coffeehouses in Parliament – specifically as agents of the dominant Whig financial regime – highlights the common public apprehension against finance-oriented coffeehouses. Arthur Murphy's piece also targets Whig dominance in exchange coffeehouses, specifically increased taxation. While these authors don't address the Whigs directly – and Defoe's other writings actually indicate support for reforms like the Bank of England – their rhetoric on the new-Gentry, stock-jobbing, and taxation is anti-Whig in a similar vein to Davenant's satire.<sup>27</sup> These pictures of exchange coffeehouses portray strong ties to Whig financial doctrine, and while their sentiments are anti-Finance their social commentaries reveal the presence of finance in these settings, demonstrating the separation of the Habermasian public sphere from its foundation within the coffeehouse.

<sup>18</sup> Markman Ellis. *Eighteenth-Century Coffee-House Culture*, volume 1 / Edited by Markman Ellis. London: (Pickering & Chatto, 2006), 233

<sup>19</sup> Charles Davenant *The true picture of a modern Whig, set forth in a dialogue between Mr. Whiglove & Mr. Double, two under-spur-leathers to the late ministry*. 3rd ed., (1701). 1 - 64

<sup>20</sup> Davenant *The true picture of a modern Whig*, 2 - 6.

<sup>21</sup> Davenant *The true picture of a modern Whig*, 12 - 27.

<sup>22</sup> Davenant *The true picture of a modern Whig*, 16.

<sup>23</sup> Davenant *The true picture of a modern Whig*, 14.

<sup>24</sup> Daniel Defoe. *The free-Holders plea against stock-jobbing elections of Parliament men*. London: [s.n.], (1701). 1 - 28.

<sup>25</sup> Bruce Louis Anderson and Philip Leonard Cottrell, *Money and Banking in England: The Development of the Banking System: 1694-1914*. (Newton Abbot: David & Charles, 1974), 74.

<sup>26</sup> Defoe, *The free-Holders plea*, 21

<sup>27</sup> Anderson and Cottrell, *Money and Banking in England*, 74 - 85 / Defoe, *The free-Holders plea*, 11 - 13.

Evident in all aforementioned sources is a disconnect between the views of the Habermasian public sphere on finance, and the reality of exchange coffeehouses and their support for finance. The preface to *Exchange-Alley* includes critiques of speculative trading as a source of “imaginary profit” inferior to more productive working-class trades, and states that swindling gamblers take up a “more profitable Business at Jonathan’s Coffee-House.”<sup>28</sup> One of the key tenets of the Financial Revolution and a source of wealth for many new-Gentry, joint-stock trading is disparaged as inefficiency and corruption. Similarly, Arthur Murphy’s periodical takes aim at the moral bankruptcy of stock-jobbers, as well as the actual bankruptcy of the English public as a result of financial trickery.<sup>29</sup> Periodicals like Gray’s Inn were fundamental to the creation of the public sphere, and Murphy framing finance as a drain on the English productive classes epitomizes public disapproval of the new direction the state was taking in terms of finance. Even Davenant, who held a cautious yet fond appreciation for public credit in the wake of the English financial crisis of 1698, lambasted the middle-class benefactors of the new financial system in his coffeehouse satire.<sup>30</sup> However, the very existence of finance within the coffeehouse, as laid out by this piece, demonstrates that this public criticism was not reflective of the sentiments found within finance havens like Garraway’s, Jonathan’s, and White’s. This division between the public sphere and the coffeehouse over the issue of finance implies that coffeehouses were not universally conducive to public interests. In fact, considering the role that exchange coffeehouses played in expanding wealth and influence to a relatively small group of middle-class bourgeois in their bid to rival the landed aristocracy, the existence of strong financial interests in these institutions directly contradicts Habermas’s idealized picture of the coffeehouse as a democratizing force, at least in an economic sense. While I agree with his idea of the coffeehouse public sphere challenging the authority of the absolute monarchy – a tendency which

is evident from prominent players in the public sphere like Davenant – the Glorious Revolution asserted parliamentary power and ushered in a new financial regime dictated by Whigs, and exchange coffeehouses both benefited from and supported this new form of state authority.<sup>31</sup> Thus, the exchange coffeehouse was not a meaningful participant in the public sphere in the post-Revolutionary period, and Habermas’s general story of public antagonism from the coffeehouse against the state must be complicated further by considering the new form of elite power that emerged during the Financial Revolution.

In reality, the exchange coffeehouse was – despite its internal tensions surrounding finance – an economically liberal institution reflecting the financial interests of the middle class with a veneer of democratic representation. While some authors argue that middle-class interests were only reflected in politics after electoral reforms during the Industrial Revolution, evidence of middle-class finance in the coffeehouse in the context of Whig reforms indicates that this social strata was perhaps more content with the ruling administration than once expected.<sup>32</sup> Although the coffeehouse did have a degree of democratizing effect on society through the public sphere – evident in the biting social commentary of popular satires and publications – participation in exchange coffeehouses was effectively limited to the urban bourgeoisie and adjusted to suit their needs. Contrary to contemporary views on political action within the coffeehouse, working-class interests were largely neglected in this social space and, unlike middle-class interests, would only achieve an expression of agency a century later during the movement for a People’s Charter.<sup>33</sup>

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<sup>29</sup> Murphy, *The gray’s-Inn Journal*, 29 - 34.

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## Nuclear Estrogen Receptor ER $\alpha$ may not be Involved in Estradiol (E2) Induced Heart Valve Malformations

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### Abstract

Congenital heart defects are relatively common and can prove fatal if left untreated. In utero exposure to estrogens or estrogen-mimicking compounds has been linked to heart valve malformations. One such estrogen-mimicking compound is bisphenol A (BPA), a very common component of plastic. This experiment investigated whether estrogen induced heart valve abnormalities were mediated through the ER $\alpha$  nuclear estrogen receptor. This was achieved by analyzing the health of heart valves of zebrafish embryos with or without the gene encoding the ER $\alpha$  nuclear estrogen receptor after exposure to a pathogenic concentration of estrogen. The results showed that fish with the ER $\alpha$  nuclear estrogen receptor were equally as likely to display heart valve malformations as those without the receptor. This work demonstrates that it is likely that estrogen causes heart valve abnormalities through a different pathway than the ER $\alpha$  receptor. In the future, it would be prudent to examine the role of elevated heart rate in causing heart valve malformations, as estrogen has also been shown to increase heart rate.

### Introduction

In utero exposure to compounds that mimic estrogens is associated with an increased risk of heart valve defects (Soto and Sonnenschein, 2010). Approximately 0.8% of infants born in the United States have congenital heart defects. These defects accounted for 3.7% of all pediatric hospitalizations in 2009 (Mozaffarian et al., 2016). Calcific aortic valve disease is one of the most common forms of heart disease and requires over 100,000 heart valve replacements each year in the USA (Theodoris et al., 2021). Many of these cases are in patients with congenital heart defects which cause the aortic valve to form two leaflets instead of three, possibly because the abnormal mechanical stress and flow patients observed in these patients predisposes them to calcific aortic valve disease (Yutzy et al., 2014).

Estrogen is an essential hormone with many roles including regulating the development of female secondary sex characteristics, reproductive cycles, and sexual and maternal activity (Bondesson et al., 2014). Estrogen has also been found to regulate the dorsal-ventral limit of the hemogenic endothelial niche in zebrafish embryos by antagonizing VEGF signaling. Excess estrogen inhibits VEGF signaling leading to artery, hemogenic endothelium, and HSPCs to fail to form properly. When there is a shortage of estrogen, VEGF expression expands, causing hematopoietic stem and progenitor cell production in the vein. (Carroll et al., 2014). There are several different forms of estrogen, Estrone (E1), 17 $\beta$ -estradiol (E2), and Estriol (E3). E2 is the most powerful and common estrogen in reproductive age female vertebrates. Estrogens bind to two different receptors in zebrafish, nuclear estrogen receptors, and the G protein-coupled estrogen receptor (GPER). There are a few different nuclear estrogen receptors in zebrafish, ER $\alpha$ , ER $\beta$ 1, ER $\beta$ 2 (Cui et al. 2013). Nuclear Estrogen receptor ER $\alpha$  is encoded by the gene *esr1*. *Esr1* has been found to have strong expression in the heart, especially in the valves during embryonic development (Gorelick et al., 2014). Estrogen receptors have been detected in the heart valves using the transgenic zebrafish line Tg(5xERE:GFP), which uses five estrogen receptor elements to drive GFP expression, (Gorelick and Halpern 2011). Receptors ER $\beta$ 1 and ER $\beta$ 2 both show the strongest expression in the embryonic liver (Gorelick et al., 2014).

Zebrafish treated with estradiol exhibited a 20% increase in heart rate. This effect was shown to be mediated by GPER as fish with loss of function mutations in their nuclear estrogen receptors still exhibited the effect. GPER transcripts were not found within the heart of zebrafish embryos, but was detected within the pituitary, implying that GPER acts centrally to regulate heart rate in the brain. Nuclear estrogen receptors were not found to colocalize with GPER in the brain,

suggesting that GPER works autonomously (Romano et al., 2017).

Miriam Semmar '18 found that treatment of zebrafish with an inhibitor of Notch, a downstream product of the VEGF pathway, and estradiol produced pericardial effusions and death (2018). Sonya Jampel demonstrated high doses of E2 administered to Zebrafish embryos during the critical period for heart development resulted in pericardial effusions and the absence of heart valves in the atrioventricular canal. She also noted weak expression of GPER within the atrium and ventricle of the heart of zebrafish embryos at 62 hours post fertilization in contrast to the findings of Romano et al. (2019).

The mechanism by which estrogen and estrogenic compounds produce these effects is not yet understood. There are a few possibilities. It could be either a GPER or nuclear estrogen receptor mediated heart rate effect that causes flow rate to be suboptimal for valve formation. It could be a GPER direct growth effect, mediated by receptors in the heart. Finally, the effect of estrogen exposure could be mediated by ER $\alpha$  receptors expressed in the heart valves. Previous research in this lab has shown that direct GPER signaling is likely not responsible for the heart valve malformations found in response to E2 exposure, as a GPER agonist was not reliably found to produce heart valve defects and did not produce any effusions (Jampel, 2021). Surprisingly, control GPER knockouts showed an increased proportion of abnormal valves, suggesting that GPER may still have a role in the development of the atrioventricular valve even at normal levels of estradiol (Lopez, 2021).

Xenoestrogens, or estrogen-mimicking compounds, may also affect heart valve development. Notch is a gene that is highly expressed in the developing heart valves and has been identified as essential for their correct formation. An inverse agonist of ER $\alpha$ , XCT790, was identified by a machine learning program designed to identify small molecules that correct gene networks dysregulated in a model of heart disease. XCT790 was predicted to prevent osteogenesis and was found to be very promising as a treatment for heart defects, arresting and even reversing many disease markers in adult mice including reducing the thickness of aortic valves and pulmonary valves. XCT790 works at least partially through the inhibition of ER $\alpha$ , demonstrating that heart defects may be formed through the ER $\alpha$  signaling pathway (Theodoris et al., 2020).

BPA, a synthetic estrogen, is a common component of plastics and resins. BPA can leach from these materials and be absorbed by the human body, causing a range of adverse effects including cancer, diabetes, obesity, and fertility problems (Romano et al., 2017). Treatment of the heart with BPA, a synthetic estrogen, can produce an increase in heart rate, an arrhythmic effect, and pericardial effusions in zebrafish (Moreman et al., 2018). Treatment of zebrafish embryos with BPA has produced estrogen receptor activation in the heart and produced a collagen deficiency in the extra-cellular matrix of the heart. This alteration could have a role in the formation of calcific aortic valve disease as the extracellular matrix is a primary molecular pathway associated with calcific aortic valve disease, alteration of which constituting a biomarker for the disease. Structural defects of the atrioventricular valves and reduced ventricular beat rate and blood flow were also observed (Brown et al., 2019).

*Esr1*<sup>+/-</sup>; Tg(fli1a:GFP) zebrafish obtained from the Gorelick lab were bred to produce the test subjects for this study. Zebrafish embryos are transparent and this strain has fluorescent heart endothelium, which allows for clear imaging of the heart valves. These fish will produce embryos homozygous and heterozygous for the *esr1* knockout, as well as wildtype embryos as a control.

Zebrafish heart development begins around 12 hours post fertilization and by 48 hours the heart valves begin to form. Zebrafish hearts are simple, only containing two chambers in comparison to the 4 chambers of human hearts, but they resemble human hearts at 22 days of gestation, making them useful models for human heart development. Additionally, zebrafish receive oxygen by diffusion for the first week post-fertilization, allowing them to survive without a functional heart (Brown et al., 2016). However, changes in blood flow do alter the shape of the heart valve. Blood flow between the atrium and ventricle is generally bidirectional until the atrioventricular valve develops, preventing backflow. Notch and *klf2a*, both genes essential for the formation of heart valves activate in response to high reversing flow and restrict expression to regions experiencing high reverse flow. Decreasing blood viscosity and changing heart rate both reduced backflow and resulted in deformed heart valves (Vermot et al., 2009). Thus, changes in heart rate or viscosity of blood, possibly mediated by estrogen, may be sufficient to cause abnormal valve growth.

This study investigated the mechanism by which

heart valve defects are produced in Zebrafish. As these defects have been associated with E2 treatment, this project will be investigating whether the effect is produced by signaling from the ER $\alpha$  receptor.

## Methods

*Esr1*<sup>+/-</sup>; Tg(*fli1a*:GFP) zebrafish obtained from the Gorelick lab were bred to produce the test subjects for this study (Romano, 2017). This strain has fluorescent heart endothelium and all blood vessels, which allows for clear imaging of the heart valves. These fish produced embryos homozygous and heterozygous for the *esr1* knockout, as well as wildtype embryos as a control. Fish pairs were set up in tanks with dividers the day before breeding. Dividers were pulled the next morning around 11 AM. Eggs were collected in E3 embryo water between 1 and 4 hours post fertilization and unfertilized and moldy eggs were removed. Clutches were mixed to produce diverse experimental groups with equally proportional representation. At 22 hours post fertilization, the estrogen was administered and embryos were dechorionated in order to ensure full effect of the dose. E2 dosage varied from 8 to 12 $\mu$ M, diluted from a stock of 10 mg/mL. At 4 days post fertilization, non-fluorescent embryos were removed. Embryos without gross defects such as tail curl or pericardial effusion were anesthetized with 0.08% tricaine and set in 60mm dishes in which the bottom was replaced with a no. 1 coverslip. Embryos were transferred to the slide and embedded in 1.2% low melting agarose to immobilize fish for imaging. The embryos' atrioventricular valves were visualized and videoed using a Nikon A1 confocal microscope for two seconds using a 20x long working distance lens. Videos were denoised, randomized, and converted to AVI. The videos were scored independently by three students on a scale of 1-4, where 1 indicated normal leaflets, 2 indicated stubs, 3 indicated no leaflets, and 4 indicated that the student was unable to score the video. A majority of students had to agree on the score for it to be counted. The fish imaged were removed from their agar setting, dissolved using 25 mM NaOH heated at 95°C for 10 minutes, mixed, and then heated at 95°C for another 10 minutes. The solution was then neutralized using 40 mM Tris-HCl, and stored in a refrigerator. PCR was then run on the DNA using primers specific to the *esr1* knockout region. The DNA product was finally run in an 8% acrylamide gel in order to ascertain the genotype of each

fish. This information was paired to the heart phenotype. Fischer's exact analysis was run on the data to ascertain significance. For more detailed methods, see appendix.

## Results

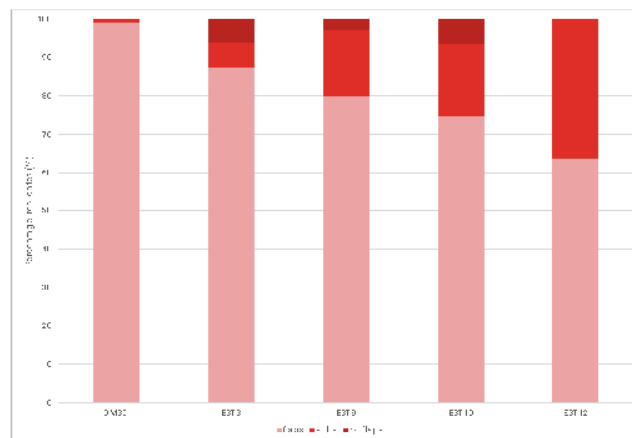


Figure 1: Dose curve phenotype data for DMSO (n=98), 8 $\mu$ M E2 (n=16), 9 $\mu$ M E2 (n=35), 10 $\mu$ M E2 (n=79), and 12 $\mu$ M E2 (n=22). Zebrafish used were mixed genotype. Fischer's exact analysis showed  $p < 0.01$

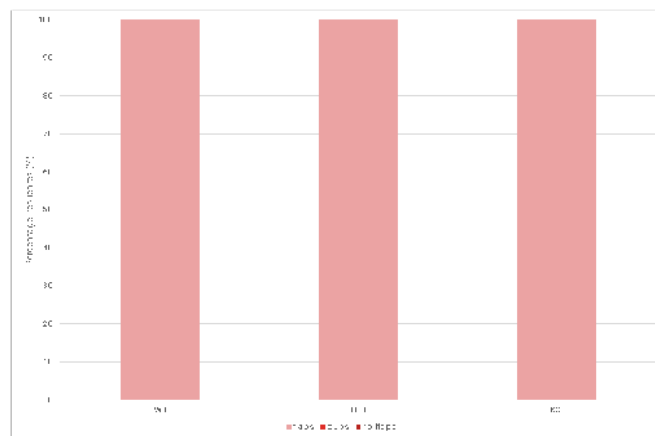


Figure 2: Composite data from DMSO treated fish from all genotypes, wildtype (n=9), heterozygous *esr1* knockout (n=35), and homozygous *esr1* knockout (n=22)



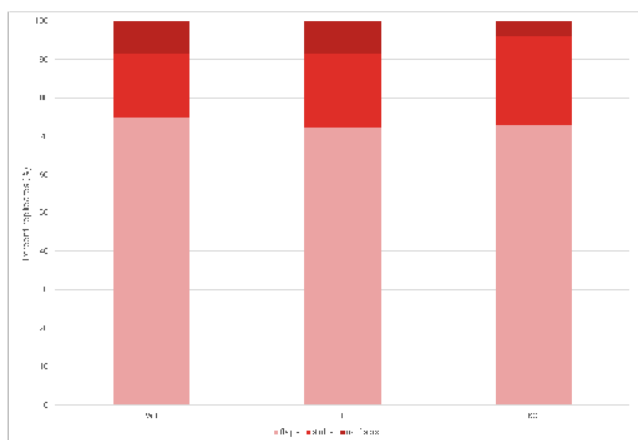


Figure 3: Composite data of valve phenotype dependent on *esr1* genotype from 10µM E2 treated, wildtype (n=24), heterozygous *esr1* knockout (n=36), and homozygous *esr1* knockout (n=26).

Fischer's exact test showed  $p=0.944$

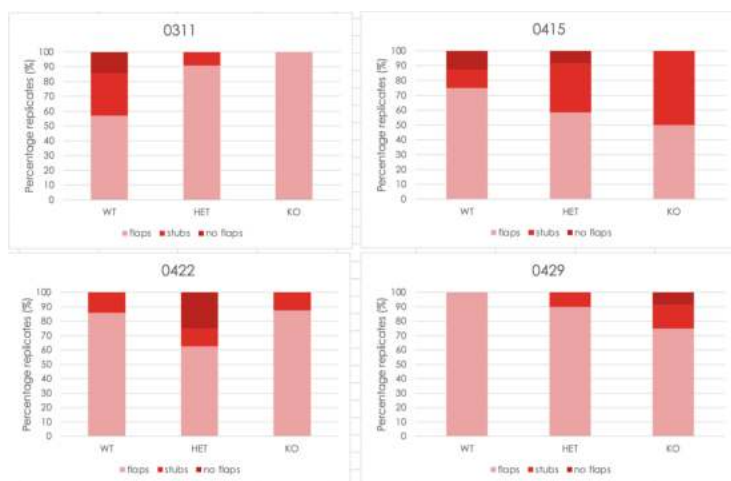


Figure 4: weekly breakdown of valve phenotype as dependent on *esr1* genotype

When all genotypes were combined, E2 treatment at all doses tested increased the proportion of abnormal valves. When treated with DMSO, only 1.0% of embryos showed flap malformation. 8µM E2 increased this proportion to 12.5%, 9µM to 20.0%, 10µM to 25.3%, and 12µM to 36.4% (figure 1). 12µM treated fish showed a high proportion of pericardial effusions and tail curl, so 10µM E2 was chosen for experimental treatment as it showed the highest proportion of malformed valves while maintaining a low proportion of gross defects.

Across all genotypes, embryos treated with DMSO showed no heart malformations, showing that the *esr1* knockout doesn't produce any heart valve

or gross defects alone (figure 2). Embryos treated with 10µM Estradiol did not show genotype specific effects. 25% of wild type fish showed valve defects, 27.8% of *esr1* knockout heterozygotes, and 26.9% of *esr1* homozygous knockouts (figure 3). The difference between groups was not shown to be significant, showing that nuclear receptor ERα expression did not mediate E2 triggered heart valve malformation. Weekly results varied widely with no consistent trend (figure 4).

## Discussion

This work confirmed previous work in the lab by Miriam Semmar '18 and Sonya Jampel '19 that excess E2 leads to malformation of the atrioventricular valves. It was found that a dose of 10µM of E2 was ideal to cause heart valve abnormalities without a high proportion of pericardial effusions or tail curl. It was clear this phenotype was due to the estradiol treatment as embryos treated with DMSO didn't exhibit any malformations.

This ideal dose of 10µM E2 was used to study whether genotype had any effect on valve phenotype. Statistically, there was no difference in the proportion of fish with abnormal valves between wildtype, *esr1*<sup>+/-</sup>, and *esr1*<sup>-/-</sup> embryos. In weekly groups, there were differences observed, but these trends were not consistent and proved insignificant when data was compiled. Across all genotypes and weeks, DMSO treated embryos always had healthy leaflets, showing there was no difference in vehicle or treatment technique.

Some weeks did show abnormalities. Data could not be collected one week as most embryos showed gross malformations despite receiving the same 10µM dose of E2 as in other weeks. This raises the possibility that there may have been weekly unintended variation in estradiol dose or that some fish may have been more susceptible to the E2 treatment for reasons other than their *esr1* genotype. Additionally, due to the difficulty of embedding the embryos at the correct angle for imaging, there were many embryos that couldn't have their heart valves clearly imaged, adding uncertainty to the scoring process. To mitigate this uncertainty, three people scored each video and a majority had to agree for the score to be counted.

The results of this experiment show that heart malformations caused by E2 exposure are likely not mediated by the ERα nuclear estrogen receptor. As previous results from this lab have shown the effect is also likely not mediated by the GPER receptor, future

work should focus on isolating new targets that might mediate this response. One particularly promising target is heart rate. Past work by Vermot et al. showed that blood viscosity and heart rate affect backflow in the developing heart, activating expression of genes vital for heart valve formation. Estrogen has been shown to mediate increases in heart rate. It is possible these heart rate changes could impede valve development. While the results of this experiment seem to indicate that valve development is not mediated by the ER $\alpha$  nuclear estrogen receptor, more work is needed to confirm this result and investigate further the biological mechanism of malformation.

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## Appendix

### *Fish Breeding and Doing Protocols*

#### *Setup*

- Set up tanks
- Put in dividers
- Fill tanks with water up to 1 cm below the top of the divider to mimic shallow water
- Make sure to run reservoir water at the same time as not to drain water supply
- Put one male one female on either side of the divider
- Label tanks with breed content and pigment level
- We bred fish heterozygous for *esr1* knockout
- Cover tanks
- MAKE SURE TO TURN RESERVOIR WATER OFF
- Push cart to the side and leave overnight

#### *Egg Collection*

- Pull dividers at 11 in morning to allow fish to mate
- After eggs are laid, remove fish from tanks
- 4 hours after eggs are laid, remove them from their tanks
- Take out inner filter
- Pour water over handheld filter
- Add DI water and swirl then pour over filter again
- Flip filter upside down over a petri dish then use the handheld egg water bottle to pour water over eggs to remove them from filter
- Fill petri dish only halfway
- Then remove unfertilized and moldy eggs from water

- Refill with egg water up to halfway then place in incubator at 28°C

#### *Dosing*

- Prepare estradiol and DMSO treatment using 4mL of E3 embryo water, 4 mL of 1x E3 + 2x PTU, and 14µL of DMSO and Estradiol, to the proper estrogen concentration
- Remove embryos from 28°C
- Get out net and wet
- Pour embryos into net, making sure to use the side without the embroidery
- Flip net over and dislodge embryos using treatment solution into smaller petri dish
- Label petri dishes (pink=EST10, green=DMSO)
- Dechorionate fish carefully and return to incubator

#### ***Confocal Protocol***

##### *Setup*

- Prepare 0.08% tricaine from 0.4% stock and put in petri dish
- Take out dosed fish—DMSO, 8, 9 µM estradiol
- Prepare agar (1.2%?) and put in heat block to melt
- Take confocal dish and form seal at bottom using agar

##### *Immobilization of Fish*

- Pipette 6-7 fish into 60 mm dish with 0.8% tricaine
- Check fluorescence and remove any non-fluorescent fish
- Pipette up (headfirst) and put into confocal dish
- Pipette up any excess liquid
- Pipette a blob of agarose in (bigger is better to increase setting time), sink any floaters, and arrange in line leaning slightly left
- Wait for Agar to set then add a couple drops of tricaine on top
- Make label
  - Treatment (ex. EST10 or DMSO) and color code (ex. Pink or green)
  - Diagram of fish location for reference
  - Fish and date (fli1a\_220124)
  - File names (plate number and fish number, ex 1001)

##### *Imaging*

- Sign in to the sheet
- Turn on everything in the order on the sheet (turn off

every laser but #3 and #6)

- Lens LWD 20x WI λs NA=0.95
- Add a drop of DI on top of lens
- Use lens paper to clean bottom of plate. Check if fish are to the left and put in confocal
- Turn on white light under DIA
- Raise lens to ~1500, focus/center heart ~1800 hit PFS
- Click (red) +green fluorescent to see through camera (turn off camera lock on microscope)
- turn down o488 (laser) to ~0.7 to get good brightness, can also turn down Hv for similar effect
- Check time tab and uncheck everything else to left, click “run now”
- Image>advanced denoising>apply to all frames
- Save again (tag\_dn)
- To switch plates, lower by hand a bit then hit “quick escape”, switch plates

##### *Clean Up*

- After done, lower to ~200, remove plate, wipe DI water off lens, switch lens
- Turn off everything in the reverse order on the sheet

##### *Scoring*

- Transfer files to computer
- Make separate denoised folder
- Randomize files (see code below)

##### ***Code***

```
##location of main folder
setwd("folder Pathname")
## randomize and re-name
filenames <- list.files(getwd())
num.videos <- length(filenames)
new.names <- sample(paste("220204-", 1:num.videos,
".nd2", sep = "")) ##can change so date name of dir.
create("Randomized220204")
dir.create("Randomized220204")
file.copy(from = paste(filenames, sep = ""), to =
paste("Randomized220204/", new.names, sep = ""))
## Key to match randomized to original
video.key <- data.frame(Original = filenames, Filename
= new.names)
write.csv(video.key, file = "Video_Key220204.csv", row.
names = FALSE)
• Convert files to AVI using fiji
• Upload to google drive and make scoring sheet
```

- Score into flaps, stubbs, no flaps, and un-scorable
- Analyze composite data

### ***Genotyping Protocol***

#### *DNA Extraction--hotshot*

- Using a forceps, fish were cut from their agar setting, being careful to keep the order and number intact
- 0.08% tricaine was added to fish and they were extracted from the dish one at a time using a micropipette with the tip cut off and put into a labeled PCR tube
- Excess liquid was suctioned off and 25  $\mu$ L 25 mM NaOH was added to each tube.
- The tubes were heated at 95°C for 10 minutes in a PCR machine. They were then mixed until fish were dissolved and heated at 95°C for another 10 minutes. The reaction was then neutralized using 25  $\mu$ L 40 mM Tris-HCl. Tubes were stored in the refrigerator
- PCR was run using primers specific to the *esr1* knockout region
  - *Esr1*-HRM-F ACAACTCCTGCCTGTCAGT
  - *Esr1*-HRM-R TTTGTGCAGGTCCAGTGTGG

#### *Gel*

- An 8% acrylamide gel was prepared using the Mighty Small vertical electrophoresis mold
- 2.5  $\mu$ L of 6x purple loading dye was added to each DNA sample and mixed.
- 7 $\mu$ L of each sample was loaded into each well, making sure to leave a unique number of wells before the ladder on each gel in order to ensure gels aren't confused in analysis.
- 2  $\mu$ L of quick load 1 kb DNA ladder was added to each gel
- The gel was run at 50-60 V for a few hours or until bands migrated at least halfway down the gel
- Gels were removed from molds and developed for 15 minutes in dilute Ethidium Bromide
- Gels were then visualized and genotype was interpreted from sample length

#### *Analysis*

- Genotype information was paired to scoring data and Fischer's exact test was run in Stata to ascertain significance

# The Importance of Gut Microbiome in the Modulation of Depression

Cynthia Masese '23

Depression is the second leading cause of disease burden worldwide and ranks highest in psychiatric disorders prevalence (Ferrari et al., 2013). While mental health has been put in the forefront of research, there is still uncertainty about the neurophysiological causes of depression. With growing research on the bidirectional relationship between the gut and the brain, scientists have begun to explore how gut microbiome diversity relates to depression. Previous studies have demonstrated that there is a significant association, and further blocking and mimicry studies point to a direct link between the gut microbiome and depression. This paper will present evidence that establishes the gut microbiome as necessary for the modulation of depression.

## The Gut-Brain Axis Overview

The brain has long been understood as the body's command center, regulating body functions and maintaining homeostasis through the central, peripheral, and enteric systems. As a complex organ that perceives, integrates, stores, and communicates internal and external information, the brain interacts with all the physiological systems throughout the body. The gastrointestinal (GI) tract, also known as the gut, is primarily responsible for the digestion of food, absorption of nutrients, and excretion of waste. These functions are critical to sustaining life and maintaining homeostasis for organisms. Furthermore, the gut has its own microbiome, host to a diverse and complex environment of microorganisms, including bacteria, archaea, and eukarya living in symbiosis with the human body. Probiotics are beneficial bacteria that live in the gut or can be ingested, and they aid with general digestive system functioning and are also critical in immune functioning (Thursby & Juge, 2017). The existence of many microorganisms' families and types is crucial for maintaining homeostatic functioning, and when diversity is lost, gastrointestinal capabilities generally decline.

In recent years, more attention has come to how the cognitive and emotional functions of the brain interact with gastrointestinal functions through a bidirectional relationship. A common communication pathway in the gut-brain axis is the hypothalamic pituitary adrenal (HPA) axis, a branch of the autonomic nervous system. This pathway is exemplified by how psychological stressors can alter gut functionality. The ANS sends signals that lead to the alteration of motility, intestinal permeability, immune function, and more (Chen, Xu, & Chen, 2021). Inversely, the gut microbiota also has modulating effects on brain functioning. While the CNS communicates with various parts of the body, what sets the gut apart is its complex neuron network which is made of 200 to 600 million neurons (Mayer, 2011). Since these neurons are located in the gut, gut microorganisms can interact with them. The microbiota can thus have an upstream influence on the CNS through metabolic and neuroendocrine pathways (Carabotti et al., 2015).

## Depression Overview

Depression can be characterized in various dimensions, from neurobiological to psychobehavioral. In clinical settings, depression is determined based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) criteria. Some criteria include depressed mood, diminished interest or pleasure in activities, significant weight loss, slowing thought processing or physical movement, and fatigue (APA, 2022). Depression is an etiologically complex disorder that can be investigated from various lenses. The monoamine hypothesis suggests that depression results from low levels of neurotransmitters like serotonin and norepinephrine (Rot, Mathew, & Charney, 2009). Monoaminergic antidepressants are commonly used to treat depression, but the response rate is low (Martín-Hernández et al., 2021). Furthermore, some researchers point to stress as a precipitating factor for depression.

They posit that stress interacts with genetic factors of individuals that influence their risk for depression. It is just as imperative to consider the gut-brain axis when investigating depression etiology because research seems to support already existing pathways between the gut-brain axis and hypothesized depression mechanism. Exploring a more causal relationship between the gut and depression may provide new insight in how we approach depression diagnosis and treatment.

### Finding the Connection

Extensive research has investigated the connection between the gut microbiome and depression. For example, patients with depression were found to have lower counts of *Bifidobacterium* and *Lactobacillus* than people without depression (Aizawa et al., 2016). Previous studies have determined that *Bifidobacterium* and *Lactobacillus* are probiotics that promote stress response and psychological well-being, so the study focused on these bacteria. They found this association by taking fecal samples from patients with depression and healthy controls. The bacteria were counted through a bacterial rRNA-targeted reverse transcription-quantitative polymerase chain reaction. This study sets the foundation for exploring which bacteria are essential for modulating depression.

Furthermore, a systematic review found that across multiple studies, researchers have found that there is a correlation between depression and altered composition of gut microbiota in depression. Their quantitative synthesis consisted of nine studies that control for comorbidity and experiment procedure. Like the previously mentioned study, this review found certain bacteria at low abundance in people with depression. However, they also found that there are classes of bacteria that have a high abundance in people with depression, suggesting these bacteria could be influencing depression. Although they found trends that point to gut microbiome alteration in people with depression, the results did not indicate consistent patterns in terms of microbiome diversity. Therefore, conclusions cannot be drawn about specific microbiota that impacts depression but rather supports the idea that gut alteration is associated with depression.

A major limitation of association studies is that they often do not control for confounding variables that could impact the expression of depression or gut microbiota diversity. This limits the conclusions that can be drawn about the relationship between the two variables.

With this in mind, researchers have been utilizing experimental methods that specifically investigate the relationship between the gut microbiome and depression.

### The Depletion of Gut Microbiome and Depression

A common experiment model used in exploring the relationship between the gut microbiome and depression is using animal models that have their gut microbiome altered. A study found that when antibiotics that compromised the gut microbiome were administered to mice, they showed depression-like behavior (Guida et al., 2018). They administered an antibiotic cocktail of Ampicillin, Streptomycin, and Clindamycin in water to healthy mice for two weeks. The exposure to antibiotics led to an imbalance of gut microflora, which is known as dysbiosis. The control mice were given sterile water. The depression behavior of increased immobility time in the tail suspension and forced swim test were observed in dysbiosis mice compared to the healthy mice. Unlike simple association studies, this experiment manipulated the gut microbiome to observe the implications it has on depression-like behavior.

To further emphasize their point, the researchers treated the dysbiosis mice with probiotics with the intention of restoring some microbiota diversity. Repeated probiotic treatment for the dysbiosis mice resulted in a decrease in immobility in both experimental conditions. This study further underscores the direct effect of gut microbiota on depression expression.

Although this is a promising study in terms of validating those changes in the gut microbiome influences depressive behavior, it is important to note that it does not confirm what part of gut microbiome influences depressive behavior. For example, another study found that germ-free mice should show a decrease in depressive-like behavior (Zheng et al., 2016). In this study, researchers used germ-free mice rather than treating the mice with antibiotics. Germ-free (GF) mice, which are considered sterile and lack microbiota, were used as the experimental group (Qv et al., 2020). They were compared to specific pathogen free (SPF) mice that contained microbiota but were free of pathogens that might confound the data. In this study, the alteration of the gut microbiome led to a decrease in depression-like behaviors. Thus, no conclusions can be made about if its certain bacteria induce depression or if there are bacteria that prevent depression. Nevertheless, both studies

weaken the argument that the relationship observed in the association studies are due to confounding variables. Rather, these studies emphasize that there is a direct connection between the gut microbiome and depression.

### Fecal Microbiota Transplantation

One method of investigating the impact that changes in the microbiota have on organisms is fecal transplants. This protocol typically takes fecal samples that contain a certain microbiota diversity and transplants them into an organism that is either lacking or is different from the donor (Kelly et al., 2015). The transplanted microbiota becomes integrated into the recipient's system and can result in biological and behavioral changes. Fecal transplants have been used to further the understanding of the relationship between microbiota changes and neurobehavioral outcomes.

One study found that when fecal samples from patients with MDD were transplanted to microbiota-depleted rats, the recipient animals exhibited physiological and behavioral characteristics of depression (Kelly et al., 2016). Patients were recruited from psychiatric clinics and had been diagnosed with MDD based on The Diagnostic and Statistical Manual of Mental Disorders (DSM IV) criteria. Furthermore, people were excluded from the study if they had anything that could confound the data. For example, exclusion criteria included if they used probiotics, had taken antibiotics recently or had a history of bowel disease. The adult rats were given an antibiotic cocktail to cause dysbiosis for 28 days before the fecal transplantation. The researchers used fecal samples from 3 of the most severely depressed male patients for the transplant and from 3 healthy controls that matched their age and sex.

The rats that received a transplant from the depressed pool showed anhedonia-like behaviors in the sucrose preference test, anxiety-like behaviors in the elevated plus maze, and center aversion in the open field test. These behaviors are considered depressive-like behaviors in the rat model. This study provides support for a direct link between the gut microbiome and depression because the introduction of microbiota from people who suffer from depression leads to more depressive-like behavior. A consideration for this study is that there is some variance in microbiota makeup between humans and rats. Nevertheless, the fact that changes in behavior were seen in a cross-species study, even with more limited

areas of overlap, implies the relationship is significant.

### Conclusion

Evidence has been presented that supports the theory that there is a direct link between gut microbiome diversity and the onset of depression. Numerous studies have created the foundation for the relationship, and controlled experiments have shown that there is a defined path between the two conditions. While the data points to a direct link between the gut microbiome and depression, more research needs to be done to adequately support a causal relationship. In the future, more research is needed to define the specific microbiota that induces and modulates depression, and researchers should continue investigating the translatability of rodent-model studies. Nevertheless, this preliminary finding offers hope for both depression diagnosis and treatment.

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