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UNDERGRADUATE RESEARCH JOURNAL

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Letter From The Editor

Throughout the year, *Lucerna* curates the wonderful research conducted by undergraduates at the University of Missouri — Kansas City. The selected works are then edited and published in a new volume. This journal has grown in the fourteen years since the first publication, and I am pleased to present this fifteenth volume of *Lucerna* published by the Honors College.

I have been involved in the publication of *Lucerna* for three years. I joined the editorial board in Spring 2019 as the Managing Editor under the Editor-in-Chief Katelyn Fisher. Katelyn received the submissions for this volume, managed the review process for the two priority deadlines, and led the journal for the 2019-2020 academic year. She has since transferred to another university and could not be the Editor-in-Chief for the publication of this fifteenth volume, but she is recognized here for her contributions. In these past few years many students have contributed to the journal. This development has continued as this is the first volume of *Lucerna* published with an ISSN. We have also worked to build a greater presence on campus through more outreach and publicity. This outreach helps us receive more submissions and develop our network of student reviewers, who are the key part of *Lucerna's* ability to evaluate the submissions received. Additionally, the Honors College has continuously supported the development of this journal.

I also want to recognize the work of our staff. Our two senior staff members are Anabeth Laaker (Marketing and Design) and Ella Valleroy (Public Relations). Anabeth developed the publicity materials for *Lucerna*, worked with the manuscript editor, and assisted on countless other design projects. In addition to other publicity matters, Ella has created and maintained the list of instructors to inform them of submission deadlines and criteria. I am very grateful for the work that Anabeth and Ella have done for *Lucerna*.

In this fifteenth volume, you will see the interdisciplinary pillar of *Lucerna's* mission. These papers address topics ranging from panhandlers in Kansas City to understanding the impact of misogyny in historical accounts of Eleanor of Aquitaine

to examining Euler's thoughts as he explored what a negative or imaginary logarithm would look like. Congratulations and thanks to our contributors for their remarkable work.

Richard Schneider

Editor-in-Chief



EDITORIAL BOARD

Editor-in-Chief: Richard Schneider

Richard Schneider is a senior at UMKC pursuing a double degree for a B.S. in computer science and B.S. in mathematics and statistics with a minor in German. He joined *Lucerna* his freshman year as a student reviewer and is also involved in other academic organizations across campus. Schneider has researched and written about the legal and ethical questions around technology's usage in places like autonomous vehicles and electric scooters. After graduation, he is interested in working as a software developer dealing with applied mathematics and possibly attending graduate school to further research this exciting topic.

Managing Editor: Lee Francis

Lee Francis is a sophomore at UMKC pursuing B.A. degrees in psychology and biology with a minor in Chemistry. They joined *Lucerna* in their sophomore year and is involved in other organizations across on and off campus. In 2020, Francis was published in the *Sosland Journal* for their essay "The Cultural and Structural Implications of American Automobile Culture." They are also interested in researching the foundations of prosocial behavior in young children. After graduation, Francis will be pursuing a degree in medicine with a specialty in either psychiatry or neurology.

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Failing the Fight: The Historical Context of US Environmental Conservation and How Endangered Species are Mismanaged in the Current Legislature

By Samantha N. Hays

The Endangered Species Act (ESA) of 1973 established a baseline for the ethical treatment of threatened or endangered species and acted, in a pivotal time for environmental legislature, as the first large-scale species protective measure. Drafted on the heels of two other national environmental standards, the Clean Air Act of 1970 and the Clean Water Act of 1972, the ESA is composed of 18 sections dedicated to the documentation, monitoring, and protection of threatened or endangered species. However, due to the broad nomenclature found in Section 9, the strict implications for the public, the lack of expenditure documentations, the general lack of species successes, the immense backlog of unaddressed species and inadequate filing method, the ESA now provides little relief to the plants and animals it protects. Simply because the ESA is a foundational achievement of modern environmental legislature does not make it beneficial today—it also does nothing to acknowledge the displacement of species due to climate change. There is an environmental movement occurring which champions proposed amendments and alterations to the Act. This is quite possibly the only way to utilize the legislature without an altogether repeal. These actions must be taken quickly, as in recent years, the ESA has become a target for American politicians looking to decrease government expenditures. Under the amendments proposed by the Obama administration, and further actions by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, the ESA has the potential to save countless species on the brink of extinction.

Perspective

The extinction rate of vertebrate species has increased a hundredfold over the last century (Ceballos et al 2015). This is not simply an aesthetic concern for the loss of posterchild species like the panda or the rhino; ecologist Robert Costanza and

his colleagues estimated that the biosphere provides services, some of which remain largely untapped, worth around \$33 trillion a year (1997). Meanwhile in 1997, the year that study was completed, the entire global economy was only producing around \$18 trillion a year (Costanza et al., 1997). A later study in 2010 confirmed these estimates and furthermore stated that if we did nothing to preserve species, it would cost 18% of global economic output (Anderson). While placing economic values on the beautiful diversity of organisms may seem “cold and heartless,” many conservationists have embraced the concept of ecosystem services (Marshall, 2015). (Ecosystem services will be later discussed in the “Environmental Species Act:Worth” subsection.) By providing these values to the public, conservationists are able to ascertain the worth of the land they serve. So, both for aesthetic pleasure and for economic practicality, preserving species produces net benefits and proves to be a worthwhile investment.

Historical Environmental Legislation and Context

In the United States, in order to place legal sanctions on aspects of the environment, Congress must pass a law known as a statute (Meyer, 2017). A statute formally empowers entities such as the Environmental Protection Agency (EPA) to operate as an independent agency of the federal government (Meyer, 2017). Other entities such as the United States Fish and Wildlife Service and the National Marine Fisheries Service act as agencies of the U.S. federal government within the Department of the Interior and the Department of Commerce, respectively. Congress also allots federal funding for the entities to enforce rules at both the federal and the state level (Meyer, 2017). There are two laws that have allowed the EPA to set and federally enforce critical environmental standards: the Clean Air Act of 1970 and the Clean Water Act of 1972, otherwise known as the Federal Water Pollution Control Act Amendments of 1972 (Meyer, 2017). The U.S. Fish and Wildlife Service as well as the National Marine Fisheries Service enforce and regulate protective measures under the Endangered Species Act of 1973, which is also still in effect today (Endangered Species Act). These historical environmental protection acts and amendments were spawned out of the increased public awareness of the late 1960s and 1970s following multiple national environmental crises and championed by an unlikely political figure (Rothman 2017).

The Federal Water Pollution Control Act of 1948 essentially replaced America’s oldest environmental statute, the Rivers and Harbors Act of 1899 (“Section 404 of the Clean Water Act”), as the first major U.S. law to directly address water pollution

(“History of the Clean Water Act”). Upon its first amendment in 1972, the Federal Water Pollution Control Act was henceforth known as the Clean Water Act, or CWA (“History of the Clean Water Act”). The Clean Water Act now establishes the basic structure for regulating pollutant discharges into U.S. waters, grants the EPA authority to implement pollution control programs and set wastewater standards, maintains existing requirements for setting water quality standards for surface water contaminants, makes it illegal for any person without a permit to discharge any pollutant from a point source into navigable waters, funds the construction of sewage treatment plants under the construction grants program, and recognizes the need for planning to address problems of nonpoint source pollution (Clean Water Act). According to the Water Education Foundation, point source pollution under regulation by the EPA is released from “discrete conveyances” such as factories and sewage treatment plants via discharge pipes; conversely, nonpoint source pollution is a combination of pollutants from a large area accumulated in runoff (“Point Source vs. Nonpoint Source Pollution”). The Clean Water Act requires each state to identify a total maximum daily load, or TMDL, for each pollutant; this is the combined amount of pollution a body of water can accept from point and nonpoint sources without compromising the EPA’s water quality standards (“Point Source vs. Nonpoint Source Pollution”).

Prior to the amendment establishing the Clean Water Act of 1972—and only seven years following the initial Federal Water Pollution Control Act of 1948—Congress also passed the first federal legislation with the intent of researching air quality, the Air Pollution Control Act of 1955 (Clean Air Act). In 1960, President Eisenhower signed a bill to enact the first large-scale Air Pollution Study, a two-year long U.S. Public Health and Service study of car emissions (Stern, 1982). The next significant air quality legislation would be the Clean Air Act of 1963, which was drafted to control air pollution control and replace the Air Pollution Control act by allowing for a specific focus on car emissions (Evolution of the Clean Air Act). This was followed shortly after by the Air Quality Act of 1967, enacted to expand federal government activities and air pollutant emission inventories as well as monitoring techniques (Evolution of the Clean Air Act). Even with these prior congressional acts, the Clean Air Act of 1970 would revolutionize air pollution control. The Clean Air Act of 1970 authorized the development of a comprehensive federal and state regulations to limit stationary, or industrial, and mobile source emissions (Clean Air Act). It would spur four major regulatory programs centered around stationary source sanctions, including The National Ambient Air Quality Standards (NAAQS),

State Implementation Plans (SIPs), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants, or NESHAPs (Evolution of the Clean Air Act).

Regarding protection of both fauna and flora, Congress passed the Endangered Species Preservation Act of 1966 signed by President Lyndon B. Johnson in order to list native animal species as endangered and provide limited protective measures (U.S. Fish and Wildlife Service). This act placed the responsibility of protecting listed species and preserving their native habitats on the Departments of the Interior, Agriculture, and Defense (U.S. Fish and Wildlife Service). The Act also authorized the U.S. Fish and Wildlife Service to acquire land as habitat for endangered species (U.S. Fish and Wildlife Service). The Endangered Species Preservation Act would be amended by congress in 1969 to provide additional protection to animals in danger of “worldwide extinction” by prohibiting their importation and sale in the United States and would change the Act’s title to the Endangered Species Conservation Act (U.S. Fish and Wildlife Service). Four years later, 80 nations signed the Convention on the International Trade of Endangered Species of Wild Fauna and Flora, otherwise known as CITES, at a conference in Washington, D.C., and in doing so agreed to the monitoring and restricting of international commerce in plant and animal species which could be harmed by trade (U.S. Fish and Wildlife Service).

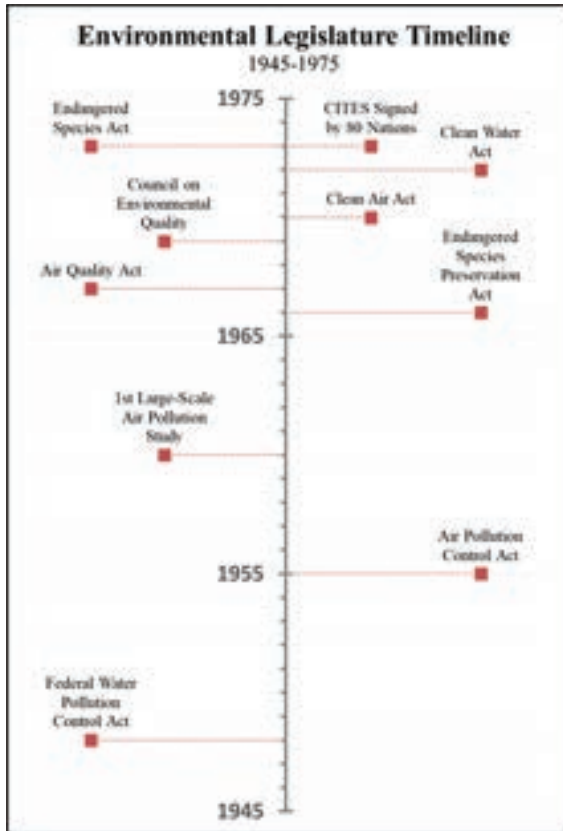


Figure 1. Environmental Legislation Timeline. Plot depicts the chronological order of several major pieces of environmental legislation.

The 1960s and 1970s were a pivotal time for environmental legislation and increased public awareness. Particularly under the Nixon administration from 1969-1974, Americans began actively engaging in public environmental conversations in the wake of air and water pollution disasters (Rothman, 2017). American biologist Rachel Carson would publish her controversial environmental classic *Silent Spring* in 1962 as an attack on indiscriminate use of pesticides such as dichloro-diphenyl-trichloroethane (DDT) (Carson, 1962). Carson's book was a call for humans to act

responsibly as stewards of the living planet earth and had the ambitious goal of igniting a democratic activist movement (Carson, 1962). Other events would bring the topic of environmental protection to American dinner tables later that decade. Acid rain was identified in North America for the first time in Hubbard Brook, New Hampshire, in the mid-1960s and would later be linked to the long-range transport of sulfur dioxide and nitrogen oxide from coal-burning power plants (Dybas, 2012). These chemicals leached calcium from the soil and dissolved aluminum-rich minerals, depriving plants of key nutrients and poisoning the flora with harmful metals (Weiss, 2012).

Then at the end of the decade, on January 28, 1969, the inadequate safety precautions of Unocal, at the time known as Union Oil, would trigger a massive explosion so powerful it cracked the seafloor in five places (Mai-Duc, 2015). The resulting crude oil spill expunged 1,000 gallons per hour for a month before it would be slowed, spewing an estimated total of 3 million gallons of oil into the ocean and creating a 35-mile-long oil slick across California's coastline near Santa Barbara County (Mai-Duc, 2015). In the same year, an oil slick on the Cuyahoga River near Cleveland, Ohio, became so saturated by decades of industrial waste that it caught fire, causing nearly \$100,000 in damages to two railroad bridges (Rotman, 2010).

About 100 miles away, Lake Erie was experiencing an extreme eutrophication and associated algal blooms due to the influx of pollutants; dead fish littered the shoreline as the algae reduced water oxygen levels below the basic survival needs of the fish (Rotman, 2010). This led to the coining of the phrase "Lake Erie is dead," which would appear in national publications throughout the late 1960s (Rotman, 2010).

Despite President Nixon's politically conservative nature and private disgust with environmentalists, the public was increasingly advocating for environmental protection sanctions in the wake of these national catastrophes (Blakemore, 2018). Though often overshadowed by the political disgrace that would lead to his resignation, President Nixon "became the unlikely champion" of air, water, and animal protection legislation during his short term as president (Blakemore, 2018). In 1969, President Nixon created an executive office titled the Council of Environmental Quality (Blakemore, 2018). In his State of the Union Address in 1970, he proposed the aforementioned clean air and water initiatives and/or amendments, stating, "The great question of the Seventies is, shall we surrender to our surroundings, or shall we make peace with nature and begin to make

reparations for the damage we have done to our air, to our land, and to our water?” (Blakemore, 2018).

Overview of the Endangered Species Act of 1973

In 1973, Congress passed the Endangered Species Act (ESA) composed of 18 sections; commonly cited sections that are pivotal to understanding the work of the ESA include Sections 3, 6, 7, 8, and 9 (U.S. Fish and Wildlife Service/Endangered Species Program).

Section 3, “Definitions” defines “endangered” and “threatened” and makes all plants and invertebrates eligible for protective measures (Endangered Species Act). As stated in Section 3, an endangered species is “any species which is in danger of extinction throughout all of a significant portion of its range” while a threatened species is defined as “any species which is likely to become an endangered species within the foreseeable future” (Endangered Species Act). Though threatened species are generally in less extreme circumstances than endangered species, threatened species have the real probability of becoming endangered species if no mitigative actions are taken.

Other terms used throughout the ESA which are defined in Section 3 include “conserve,” “conserving,” and “conservation,” which collectively mean the actions necessary to bring either a threatened or endangered species “to a point which the measures provided pursuant to this Act are no longer necessary” (Endangered Species Act).

Section 6, “Cooperation with the States,” makes funds available to states and territories for species and habitat conservation actions on non-federal lands and optioned “cooperative agreements” through which states can receive funding from the U.S. Fish and Wildlife Services to implement species recovery programs (Endangered Species Act). Section 6 funds are awarded through four programs: Conservation Grants, Habitat Conservation Planning Assistance Grants, Habitation Conversation Plan Land Acquisition Grants, and Recovery land Acquisition Grants (Endangered Species Act). Conservation Grants provide financial assistance to states and territories to implement conservation projects such as habitat restoration, species status surveys, public education and outreach, captive propagation and reintroduction programs, nesting surveys, general studies, and development of management plans for listed and candidate species (Endangered Species Act). Habitation Conversation Planning Assistance Grants provide funds to states and territories to assist in the development of Habitation

Conservation Plans, (HCPs) through support of baseline survey and inventories, document preparation, outreach, and various other planning activities (Endangered Species Act). Habitation Conservation Plan Land Acquisition Grants provide the funds necessary to states and territories looking to acquire land associated with approved HCPs (Endangered Species Act). And lastly, Recovery Land Acquisition Grants financially support states and territories in acquiring habitation to support draft and approved recovery plans (Endangered Species Act).

Section 7 prohibits federal agencies from authorizing, funding, or carrying out any action that could jeopardize a listed species or compromise its designated “critical habitat” (Endangered Species Act). This section requires federal agencies to consult with the Fish and Wildlife Service or the National Marine Fisheries Service to ensure any action authorized, funded, or implemented is not likely to further expose the listed species to dangers or adversely modify a critical habitat (U.S. Fish and Wildlife Services). Under Section 7, consultations can be formal or informal, the former being a process in which federal agencies can quickly evaluate potential mitigation action effects on species and their habitats and the latter a more extensive process to achieve a “biological opinion” from the appropriate Service (U.S. Fish and Wildlife Service). A biological opinion is an official document that determines the likely effects of a proposed action which may include an “incidental take statement” and “reasonable and prudent measures” to minimize adverse impacts of the anticipated “take” of the species (U.S. Fish and Wildlife Services). If the actions are likely to produce adverse effects on the species or habitat of concern, “reasonable and prudent alternatives” will be included in the biological opinion to redesign the project and maximize the chances of positive assistance (U.S. Fish and Wildlife Service).

Section 8 provides funding authority for land acquisition for foreign species and implemented CITES protection in the United States through “encouragement of foreign programs” (Endangered Species Act). It states that “the President shall provide assistance (which includes, but is not limited to, the acquisition, by lease or otherwise, of lands, waters, or interests therein) to foreign countries under this section under such terms and conditions as he deems appropriate” (Endangered Species Act). Section 8 also permits “the entering into of bilateral or multilateral agreements with foreign countries to provide for such conservation” via the Secretary through the Secretary of State (Endangered Species Act).

Section 9 prohibits the broad “taking” of all endangered animal species (Endangered Species Act). Section 9 defines taking as “to harass, harm, pursue,

hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (Endangered Species Act). Once a species has been listed as threatened or endangered under the definitions provided by Section 3, any taking of said species by private or public entities is made unlawful by Section 9 (U.S. Fish and Wildlife Services/Endangered Species Program). In this section, the term “harm” appears in both the definition of “taking” and as its own term, wherein it is defined as “significant habitat modification or degradation,” which injures or kills wildlife by impairing behavioral patterns such as breeding, spawning, rearing, migrating, feeding, or sheltering (U.S. Fish and Wildlife Services/Endangered Species Program). These actions are referred to as “take prohibitions” and apply to any person or entity, unless taking occurs in a situation wherein one is protecting their life and/or property (U.S. Fish and Wildlife Services/Endangered Species Program). In such cases, Section 9 of the ESA states: “no civil penalty shall be imposed if it can be shown by a preponderance of the evidence that the defendant committed an acted based on a good faith belief that he was acting to protect himself or herself, a member of his or her family, or any other individual from bodily harm, from any endangered or threatened species” (Endangered Species Act).

Endangered Species Act: Worth

In a 2011 study compiled by the National Fish and Wildlife Foundation, it was found that the calculated total value of ecosystem services in the 48 continental states was 1.6 trillion annually, equivalent to 10% of the U.S. Gross Domestic Product (Southwick Associates, 2011). Of the annual \$1.6 trillion, National Wildlife Refuges, the lands protected under the Endangered Species Act, are responsible for \$32 billion (Worland, 2018).

There are four main aspects of nature typically addressed by economists: the value of ecosystem services, the willingness-to-pay by visitors and residents to conserve species, a natural area’s revenue, and the impact neighboring natural areas have on property values (Southwick Associates, 2011). “Ecosystem services” are defined as all the beneficial functions performed by nature, such as climate regulation, carbon sequestration, nutrient cycling, waste treatment, water supply, habitat provision and a plethora of others. The second aspect, “willingness-to-pay,” tabulates to value of rare and threatened species based on what the average household is willing to pay to preserve populations (Southwick Associates, 2011). Certain factors which determine such quantity include if the person if a resident or visitor to the species’ habitat, the rarity of the species, and the charisma of

the species, among other things (Southwick Associates, 2011). The third aspect, a natural area's revenue, is a calculated total of outdoor recreation spending in said area; recreation activities include hunting, fishing, boating, nature-viewing, and other visiting activities such as educational and social gatherings (Southwick Associates, 2011). In 2011 the U.S. Department of Interior (DOI) reported that 439 million visits were made to DOI lands, the revenue of which supported 388,000 jobs and provided over \$47 billion in economic activity (Southwick Associates, 2011). The last aspect relevant to economists, a natural area's effect on nearby property values, is typically arranged in single-site studies (Southwick Associates, 2011). One single-site study found that properties closer than 100 meters to the National Wildlife Refuge (NWR) in Middlesex County, Massachusetts, were valued at prices \$1,075 higher than properties further away (Neumann et al, 2009).

Endangered Species Act: Reported Costs

The Endangered Species Act Document Library, made available to the public by the U.S. Fish and Wildlife Services, contains tabulated annual expenditure reports from 1996 to 2016. Complete reports of fiscal year expenses related the Endangered Species Act prior to that year are unknown, as in 1988, the Act was reauthorized and amended under Public Law 100-478 to include Section 18—requiring the U.S. Fish and Wildlife Service on behalf of the Secretary of the Interior to report annually the “reasonably identifiable” costs of conserving each species (2016 Expenditure Report). Expenditures also are listed for each individually listed species, subspecies, Distinct Population Segment (DPS) or Evolutionarily Significant Unit (ESU) (2016 Expenditure Report).

According to the first available report's “Executive Summary,” “only those expenditures that are reasonably identifiable for a listed species are to be reported” from all federal agencies which receive the funds through grants listed in Section 6 (1996 Expenditure Report). These costs “include fisheries, refuges, land acquisition, law enforcement, research, and regional and field operations for listing, recover, consultation, environmental contaminant and habitat conversation activities” (1996 Expenditure Report). Excluded from these calculations are costs for conservation actions such as law enforcement, consultation, recovery coordination, litigation, and other actions not easily directed upon a particular species as well as any costs associated with species not natively domestic. Only refuge expenses that are “reasonably identifiable” as “dedicated” to a particular species are reported; for example, though listed fish species may benefit from fishery programs, costs

are rarely assigned to an individual species. Given these exclusions, the total in 1996 for costs considered “reasonably identifiable” to species listed and receiving protective measures was \$285,713,690, though this only accounted for 93% of the threatened or endangered species which were receiving assistance, leaving 7% unreported (1996 Expenditure Report). Certain expenses are unlikely to be reported under the Endangered Species Act, as they are not “reasonably identifiable” to a certain species.

To break down the total cost, \$17,791,480 went towards land acquisition, and 70% of the species with reported expenditures received \$0—\$30,000 for non-land actions (1996 Expenditure Reports). The ten species with the highest reported expenditures were the chinook salmon (both the spring/summer run variety as well as the fall run variety), the sockeye salmon, the northern spotted owl, the red-cockaded woodpecker, the marbled murrelet, the razorback sucker, the Colorado squawfish, the desert tortoise, and the bald eagle. For comparison, in the most recent 2016 Expenditure Report, the spring/summer run variety of the chinook salmon is ranked second most costly species of the 2016 fiscal year, and the fall run variety of the chinook salmon is ranked seventh most costly, totaling \$100,921,169 in “reasonable identifiable” conservation costs for both varieties (2016 Expenditure Report). Expenditures reported in the 2016 Expenditure Report for domestic and foreign species totaled \$1,478,692,129, with slightly over 93% reported by Federal agencies and the rest by the states. Of the ten costliest species of 1996, only the bald eagle no longer remains listed as threatened or endangered a decade later (2016 Expenditure Report).

Specifically noted in these reports, however, is that a “good faith effort” has been made to tabulate species-specific costs, yet “due to differences in reporting methods, this report cannot easily be compared to prior expenditure reports” (2016 Expenditure Report). The 2016 Expenditure Report notes that each year a different number of federal and state agencies report data, calculation methods change, the ability to track specific expenditures change, and the number of listed species changes, generally trending upward from year to year. If these annual fiscal year expenditure reports cannot be reasonably compared, particularly when they often list the same species in multiple reports, how reliable are the calculation methods and the “good faith” reporting of an unspecified number of federal and state agencies?

Endangered Species Act: Impacts

The Endangered Species Act, and in particular its broad definition of the term “take,” have inconvenienced landowners professionally and personally since 1973. The development of land can be severely halted when endangered or threatened organisms are found to be inhabiting anything from an acre of crop land to a prospective construction site. Though this can seem like a reasonable protective measure, the limitations of illegally “taking” of an organism can also limit that organism’s conservation success. Not only does the market value of the land associated with an endangered species often suffer, the public’s perception of the species is negatively impacted as well. Overall, the ESA impacts four primary areas: the agricultural industry/land ownership rights, construction/land development activities, economic efficiency of a land, and public perception of endangered/threatened species.

The American Farm Bureau Federation (AFBF) also known as Farm Bureau Insurance and Farm Bureau Incorporated, is a U. S.-based insurance company and lobbying group acting in the interests of American agriculture (About—American Farm Bureau). The AFBF website’s informational page describes the group as “non-partisan, non-sectarian, and non-secret,” its mission is to sustainably feed, clothe, and fuel the world. Shiloh Perry, a Media Relations Specialist for the AFBF, wrote in 2017 that the Endangered Species Act not only “prioritizes species listings over actual recovery and habitat conservation” but that it also places large regulatory burdens upon agricultural lands, impacting the “rural quality of life” and jeopardizing that facet of the economy.

Perry states that the law’s “litigation-driven model” makes it too easy for “radical environmental activists” to pursue legal measures against agriculturalists (2017). The cost of the resulting lawsuits often hurts rural economies and taxpayers alike without providing any tangible protective resources to a species (Perry, 2017). There have also been other circumstances in which farmers and landowners have pursued legal action against the federal government for unjust resource acquisition—a prime example is the *Orff v. United States* case (Minan, 2005). The federal government had cutback 50% of the contracted water supplies in the Westlands Water District in an attempt to conserve the winter run variety of Chinook salmon and Delta smelt, which posed an issue for farmland irrigation in the area (Minan, 2005).

There are plenty of lawsuit examples wherein communities dispute the nomenclature and jurisdiction of the ESA. In 2018, the Pacific Legal Foundation

filed on behalf of People for the Ethical Treatment of Property Owners in order to illustrate a better recovery plan to the threatened Utah prairie dog (Wood, 2018). Due to the ESA's broad prohibition of "taking" any listed organism, citizens were not legally allowed to move the tunneling prairie dogs from playgrounds, cemeteries, or airport runways even for conservative measures (Wood, 2018). Ultimately, the federal district court ruled in favor of the property owners and provided these citizens an unprecedented opportunity to work with the state to draft its own recovery program (Wood, 2018). Given that the prairie dogs were not native to residential areas, the state invested in the improvement of natural habitat on state-owned lands to provide the organism with permanent protection there (Wood, 2018). This conservation plan worked astronomically better than the prior federally-regulated management plan; under the state's new management plan, prairie dog populations had doubled in just five years—a population increase that took the previous plan almost 30 years to accomplish (Wood, 2018).

Not only does the ESA's broad definition of "take" affect current land use and ownership, it also impacts any possible construction which could occur in an area. The ESA applies to three general construction scenarios: (1) construction activities under the EPA's Construction General Permit (CGP), (2) activities funded/permitted by federal agencies for a construction project not within the purview of the CGP, or (3) any construction activities which may impact a listed species and/or a critical habitat (Managing Your Environmental Responsibilities). Civil penalties can be as much as \$27,500 per day per violation; "knowing endangerment" violations which pose to injure or kill a protected species result in up to \$250,000 in fines and/or 15 years in prison (Managing Your Environmental Responsibilities). In 1978, the power of the ESA over construction was first realized in a ruling regarding the Tennessee Valley Authority's dam construction and the snail darter, a 2-3-inch fish found in the upper Tennessee River basin (Gordon, 2018). The court ruled that Congress—through the ESA—intended for federally endangered species to be saved "whatever the cost" of conservative action (Gordon, 2018). The snail darter would later be found in numerous other locations and in vast quantities, and construction would resume, but the precedent it set for the ESA's "fiscal responsibility" looms large (Gordon, 2018). As previously noted, tens of billions of dollars in expenditures are often poorly estimated and tracked, and the lackluster recovery rate of listed species does little to support such high investments.

Though direct conservation costs are inconsistently reported, the effects of these measures are rarely tabulated. In May of 2018, the environmental news site

EcoWatch reported that 100 miles of construction along a \$6.5 billion pipeline in Virginia and West Virginia was delayed as it posed a potential risk for listed species such as the Roanoke logperch and the Indiana and Northern long-eared bats (Chow). The delay is unable to be resolved unless the U.S. Fish and Wildlife Service revises the “incidental take statement,” which limits the quantity of listed species that may be adversely affected during development activities and makes the movement/relocation of listed species to alternative habitats illegal (Chow). This has the potential to drastically impact the opportunity costs and reductions in property values associated with non-critical habitat (Gordon, 2018). By limiting what activities can occur on a parcel of land, the ESA potentially decreases the economic efficiency of the land with the listed species and the surrounding areas by lowering the market value of said land. Though, as illustrated by the property owners and Utah prairie dogs previously, by removing some of the risk associated with the “take” prohibitions, new conservation measures can be drafted which benefit both landowners and endangered/threatened organisms. As Texas Land Commissioner George P. Bush said, “The Endangered Species Act was designed to preserve biodiversity, not enrich trial lawyers and political activists” (Mutnick, 2015).

Endangered Species Act: Successes

Less than one percent of the species which have been listed under the protection of the Endangered Species Act have recovered enough to qualify for delisting; only 47 out of 2,244 species have been removed, with an additional 18 under consideration (Rizzo, 2019). When looking at the species that have been delisted, there is a clear trend—only species with simplistic threats to their proliferation have recovered. In 2012, the Center for Biological Diversity, a nonprofit membership organization founded in 1989 to enact conservation measures through legal action and grassroots activism, completed a survey of 110 species and later highlighted “Species Success Stories” of the most promising seven species. Those seven species included the Aleutian Canada goose, the California least tern, the black-footed fetter, the American crocodile, the whooping crane, the gray wolf of the northern Rocky Mountains, and the shortnose sturgeon.

The most recognizable conservation success in the eyes of the American public is likely to be the bald eagle. In 1940, Congress passed the Bald Eagle Protection Act, later expanded to the Bald and Golden Eagle Protection Act (U.S. Fish and Wildlife Service). Other protections were established via the Endangered Species Preservation Act of 1966 and the Endangered Species Conservation Act of 1969

(U.S. Fish and Wildlife Service). In 1972, the bald eagle gained safeguard under the Migratory Bird Treaty Act; this was also the same year the synthetic pesticide dichlorodiphenyltrichloroethane (DDT) was banned for agricultural uses in the United States (U.S. Fish and Wildlife Service). The issue with DDT was that while it was an effective insecticide, the residue that accumulated in runoff contaminated aquatic ecosystems (Heisman, 2018). Bald eagles would then ingest contaminated fish, which affected their reproductive systems, causing them to lay eggs with extremely weak shells which crushed upon incubation (Heisman, 2018). In 1963, there were only 417 breeding pairs of bald eagles in the lower 48 states, and by 1997, this number had increased to over 5,000 (Heisman, 2018). Since 1973, when the toxic chemical had completely lifted from the market, multiple bird populations have seen significant rebounds; peregrine falcons, ospreys, brown pelicans, Cooper's hawks, and bald eagle populations have all benefitted (Saha, 2015). Though the bald eagle is often discussed as the "ultimate Endangered Species Act success story" (Heisman, 2018), the conservation measures required to rebound a population hinged on alleviating a specific, often primary threat to sustainability.

Endangered Species Act: Further Fallibilities

The ESA can only assist organisms with one or limited threat sources, such as the bald eagle. Though this fallibility is shown by reviewing species that are already listed, there are multiple issues species face prior to securing protections under the ESA. The Act faces a chronic backlog of species that are doomed to fall into the purgatory of lengthy litigations before their threats are ever fully evaluated. Currently, the process of petitioning species for protection under the ESA is costly both financially and with respect to time, such to the point that many petitioning entities have sought legal action against the U.S. Fish and Wildlife Service and the National Marine and Fisheries Services for lack of punctual action. While the Obama administration had drafted possible remedies for this pitfall, the succeeding Trump administration has taken many actions in alternative directions. While any interested person can petition either the U.S. Fish and Wildlife Service or the National Marine and Fisheries Service for a listing or delisting of species for free, the current petitioning process is neither cheap nor simple. From 2007 to 2011, two organizations dominated the process, filing 90% of the listing petitions (Woody, 2011). This method of bombardment is called a "mass-listing strategy" (Woody, 2011), and is only realistically feasible for organizations with large staffing efforts; the two organizations which filed the majority of listing petitions were the Center

for Biological Diversity and WildEarth Guardians, both with annual budgets of over \$15 million (Wood, 2019). Both organizations have also filed lawsuits against the Department of the Interior over listing delays, further exacerbating the wait time (Woody, 2011).

Under the ESA, the Department of the Interior (DOI) must determine if a petition to list a species warrants further investigation within 90 days of receiving it (Woody, 2011). If the petition warrants further investigation, the DOI has 12 months to conduct a scientific investigation supporting a final decision on the species. Furthermore, all petitions made require a response. The U.S. Fish and Wildlife Service's median response cost is \$39,276 (Wood, 2019). If the petition then indicated listing may be warranted, an additional average of \$100,960 is spent (Wood, 2019). In this process, these funds are often exhausted on weak or difficult-to-understand petitions when already listed species need assistance. This is especially relevant now, as the number of petitions is increasing dramatically. From 1993 to 2007, the U.S. Fish and Wildlife Service received 20 listing petitions per year (Wood, 2019). Then from 2008 to 2011, the Service received 308 petitions per year (Wood, 2019). Under the ESA as it is currently written, there is no cap on the number of petitions one person, or more applicably, one entity can file.

The Obama administration drafted new rules for petitions that would mitigate these issues under the ESA, but requirements were not finalized (Taylor & Hiar, 2015). The drafted rules would have limited listing petitions to cover just one species at a time, banning the "mass listing strategy." This would not have been a limit on the number of petitions which could be filed but would have acted as a requirement that petitions be filed on a species-by-species basis (Taylor & Hiar, 2015). These new rules would have also required petitioners to provide a copy of their filing to the state fish or game agencies 30 days prior to submission. Those agencies would then be capable of commenting on the accuracy of the petition in a "state consultation" period. To further verify the authenticity of the filings, these changes would require petitions to contain literature citations, supporting materials, and a clear presentation of information to be considered complete. Failure to contain required elements would result in a returned petition (Taylor & Hiar, 2015).

These new rules never made it into an official amendment to the ESA, and instead, alternative changes were made by the Trump administration in August of 2019 which primarily targeted Sections 4 and 7 (U.S. Department of the Interior, 2019). With these changes, the government will now consider the economic factors before categorizing a species as threatened or endangered (Aguilera,

2019). However, as Leah Gerber, professor of conservation science and founding director of the Center for Biodiversity Outcomes at Arizona State University says, “Recovering species is a biological question, not an economic question,” and many conservationists are concerned that these new changes will disregard recovery efforts which run perpendicular to construction ventures (Aguilera, 2019). This completely ignores the economic benefits of ecological services.

Additionally, the definition of risks is no longer associated with the “foreseeable future,” potentially ignoring the effects of climate change on a species and allowing for less transparency in the listing process (Aguilera, 2019). The U.S. Fish and Wildlife Service finalized a separate revision around the same time the Trump administration was making changes. This separate revision rescinded the “blanket rule” under Section 4(d) of the ESA (U.S. Department of the Interior, 2019). Previously, the rule had automatically granted threatened species the same protections as endangered species unless otherwise noted. This change has less harmful implications than the aforementioned alterations, particularly since the National Marine Fisheries Service has never operated under a “blanket rule” for species listed through its offices (U.S. Department of the Interior, 2019). This change, and the majority of the Trump administration’s changes, will only impact future species listings or reclassifications.

The Endangered Species Act: Problem Summary

There are several problems with the Endangered Species Act as it currently operates. First, the rigid definition of the word “taking” in Section 9 of the ESA creates a negative public image of the Act and has the potential of putting a species in jeopardy when actions such as moving a species to a more suitable habitat cannot be executed. This was proven in the aforementioned case wherein the People for the Ethical Treatment of Property Owners sued against the “taking prohibition” and were able to draft alternative means for protecting the Utah prairie dog with public input that proved to recover the species with a 6x greater success rate (Wood, 2018). Secondly, there is an obvious lack of input and understanding from landowners and the public. When the public is not allowed to contribute ideas and opinions, a division is created between the work of the ESA and the public perception of the species listed. Thirdly, there is a lack of consistency in the expenditure reports required under Section 18. This includes an inability to compare expenditure reports across fiscal years when costs are often associated with the same species each year (U.S. Fish and Wildlife Service, 2016). Fourthly,

there has been no action implemented which appropriately addresses the chronic backlog of species (Woody, 2011). Again, this involves a lack of input from the public when large, wealthy entities dominate the species protection process. Furthermore, the lengthy and costly litigations that ensue often deter the ESA further from its intended function (Woody, 2011). Fifthly, the future of the ESA is determined by partisanship and economy politics such to the point that the goals of some prominent politicians contradict the foundational goals of the ESA (Aguilera, 2019).

Endangered Species Act: Solutions Concepts

Amending or repealing the Endangered Species Act is the current goal of many people and politicians. The Center for Biological Diversity offers a comprehensive and continually updated database of “Legislative Attacks on the Endangered Species Act During the Trump Administration.” As of April 1 2020, there have been 13 different bills introduced which would alter the ESA (Center for Biological Diversity). Of the 34 different bills introduced in 2019, four have passed the House of Representatives, one became public law, and one has failed, with the rest still listed as “currently being considered” (Center for Biological Diversity). All of the bills that passed in the House and/or became law prevented the listing of the greater and Columbia-basin sage grouse for one year. This is not altogether concerning, as the Washington Department of Fish and Wildlife’s Executive Summary of the species states that while the sage-grouse has been state-listed as threatened since 1998, the greater and Columbia-basin sage grouse Distinct Population Segment (DPS) does not meet the criteria for listing (Stinson, 2016). There are some potentially concerning bills which have not been voted on yet by the House, such as the “Endangered Species Management Self-Determination Act,” which aims to strip all protections from every listed species until Congress is able to pass a resolution of approval as well as eliminating a citizen’s ability to submit petitions under the ESA (Center for Biological Diversity). Additionally, the “American Energy First Act” aims to exempt any oil and gas activities on non-federal land from being held to the standards of care imposed in Section 7 of the ESA (Center for Biological Diversity). Even worse, at the end of 2019, the “Endangered Species Accountability Reform Act” was introduced, which seeks to automatically remove ESA protections after 5 years of a species being listed (Center for Biological Diversity). All of the previously mentioned acts have been proposed by Republican members of the House. In 2019, there were only 5 bills proposed by House

Democrats, 4 of which involved the delisting of the greater and Columbia-basin sage grouse (Center for Biological Diversity).

The best solution will be one that (1) validates the impact of the ESA as historic environmental legislature, (2) reflects the original goals of the ESA and conservation science, (3) is drafted through consultation with reputable sources within the U.S. Fish and Wildlife Services, the National Marine Fisheries Service, and other national and state offices within the DOI, (4) addresses the inconsistency of the expenditure reports and consolidates funding data into a concise and comparable document each fiscal year through reporting methods which are consistent across species, (5) utilizes a non-affiliated collection entity which compiles financial data from all involved agencies and organizations that receive funding, (6) addresses the need for a petitioning reform and a method to sorting the backlogged species in a timely and fiscally responsible manner, and (7) promotes a bipartisan agenda which is species-oriented and takes responsibility for the impact of our actions on the environment

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Panhandlers: Why Kansas Citians Can't (Pan)Handle Them

By Sophie Jess

Imagine you are an affluent middle-aged professional strolling through Kansas City's picturesque Country Club Plaza. Your arms are filled with bags from stores like Coach, Lululemon, and Barnes and Noble. As you walk down the sidewalk you hear a man shout, "Can I get a down payment on a cheeseburger?" What do you do? Perhaps you give him a dollar, perhaps you chuckle at his joke and give him a smile, perhaps you ignore him completely or venture to send him an annoyed glance or unkind utterance. "Can I get a down payment on a cheeseburger?" is the famous one-liner of one of the most infamous Kansas City panhandlers, Jerry Mazer. During his time in Kansas City, he became somewhat of an icon, and was known for his tenacious solicitations that could sometimes border on harassment. There was a time years ago when you could not go to Country Club Plaza without seeing Jerry. He made a career out of panhandling, primarily in the Country Club Plaza. Because of his brazen behavior, many people made it their policy to ignore him and other panhandlers when they encountered them on the street. The Country Club Plaza and its patrons do not tolerate panhandlers, as evident in their reactions to it. Perhaps they perceive it as an act that challenges the value of hard work that Kansas Citians claim to support.

In this interdisciplinary study, I will review the history of the Country Club Plaza, define panhandling, address city ordinances against panhandling, negative attitudes about the practice, and answer the question of whether panhandling is a subculture or a counterculture that alarms the dominant culture. In my investigation of Kansas City culture through panhandling, I begin with background on panhandling and the current legislation surrounding it. I then continue by discussing the attitudes towards panhandling in Country Club Plaza from various perspectives. Then, I evaluate panhandling as a counterculture and the dominant culture's response to it, and finally, define panhandling as a subculture.

The History of Country Club Plaza

The Country Club Plaza was created by Kansas City real estate mogul, J.C. Nichols, who also designed the Country Club District. Many of the most affluent neighborhoods in Kansas City are former Nichols properties (Thomas). He wrote home ownership rulebooks for his properties called covenants, which included race restrictions that precluded people of color from owning any of the houses on his properties. Many of these neighborhoods still have this racist language on their books (Thomas). The Country Club Plaza was built directly to the west of Troost Ave, the street which separates the historically white and black neighborhoods of Kansas City, a division that largely persists to this day. It was built with the intention of giving the rich white elites in Nichols' neighborhoods an equally elite place to shop. Because it was built by and for affluent people, Nichols would probably shudder at the sight of panhandlers on his Plaza; he would likely be a fervent supporter of current and proposed legislation restricting panhandling there to protect its carefully curated façade of affluence. The history of racial and socio-economic elitism in its conception, and on the part of its creator, is important to note as a potential root of the negative perception of panhandlers and the intolerance of poverty that exists in Country Club Plaza today.

What is Panhandling?

Before I can elaborate on the legislation, attitudes, and cultural relevance of panhandling, I must first define panhandling. Colloquially, panhandling refers to the act of begging on the street. According to a more formal definition in Kansas City's ordinance on panhandling, panhandling is "any verbal or non-verbal solicitation made in person upon any public street, sidewalk, alley, park or other public place, in which a person requests an immediate donation of any item of value, monetary or otherwise, from another person" (Chapter 50, Article I, Section 8.5). People often associate panhandling with homelessness, but it is important to note that you can be homeless without panhandling, and you can panhandle without being homeless.

For example, while I was researching this subject, I went to the Country Club Plaza for the Plaza Art Fair. While I was there, I saw several young children dressed in Catholic school uniforms, accompanied by their parents, soliciting donations to Saint Vincent de Paul Academy. It occurred to me that, by this definition, they are technically panhandling. Panhandling is the act of asking for money or donation in a public place, which these kids were doing. Although the kids are not what many would think of when they hear the word "panhandler" (people who, due to their

unkempt appearance, may be assumed to be homeless), they exhibited a lot of the same behaviors as the transient panhandlers often seen on Country Club Plaza. They had panhandling styles similar to the other more stereotypical panhandlers on Country Club Plaza: they would stand on the busiest and potentially most lucrative street corners, no student in sight of another at any given time, giving each group of passersby the same line: “Would you like to donate to Saint Vincent’s Academy?” However, the people out shopping and exploring the art fair were much more receptive and compassionate to the children than they typically are to the usual panhandlers on Country Club Plaza. In fact, while I was on the Country Club Plaza for the Art Fair, I do not think I saw a single stereotypical panhandler, which is practically unheard of. Their absence may indicate that Country Club Plaza’s management attempted to “clean up” the streets for the event. By clean up, I mean remove any element that it or its client base might consider undesirable, such as evidence of poverty, in order to present the most pleasant and picturesque view during times of high traffic, such as the annual art fair. This example demonstrates that the people of Kansas City react differently to different kinds of panhandlers. Perhaps it is not the act of panhandling that residents and legislators find bothersome; perhaps it is the kind of people they see doing it.

Panhandling Legislation

Panhandling is protected by the First Amendment right to free expression, according to a *Kansas City Star* article about new panhandling legislation proposed in Kansas City. In fact, Jerry Mazer, the infamous Kansas City panhandler, sued the city in 1996 over an anti-panhandling ordinance on the grounds that it was unconstitutional. He won a \$3,000 cash settlement and the city was forced to repeal the ordinance (Associated Press 6). Although Mazer probably was not the first person to file a suit against anti-panhandling legislation, his is the most notable in the discussion of panhandling in Kansas City.

Even after losing its battle with Mazer, the city passed another ordinance restricting panhandling. Despite the constitutional protections, many cities in addition to Kansas City have legislation regulating when, where, and how people may panhandle. The Kansas City Code of Ordinances regulates local panhandling and creates a distinction between passive panhandling and aggressive panhandling. Passive panhandling includes “standing, sitting or performing music, singing or other street performance with a sign or other indication that a donation is being sought, without any vocal request other than in response to an inquiry

by another person” (Chapter 50, Article I, Section 8.5). In contrast, aggressive panhandling includes threatening approaches, following, engaging in physical contact, continuing to solicit even after receiving a negative response, verbal threat, and the blocking of sidewalks and street. The ordinance prohibits aggressive panhandling and other forms of panhandling in specific commercial districts: the Country Club Plaza, the 18th and Vine Historic District, and Westport. The city prohibits these behaviors in these areas on the grounds that panhandling “threatens the economic vitality of those areas, impairing the city’s long-term goals of attracting citizens, businesses and tourists to these certain areas and, consequently, the city overall” (Chapter 50, Article I, Section 8.5). These restrictions are significant because they imply that the city values its economic vitality over protecting the constitutional rights of its people.

In addition to the existing ordinance, in Fall 2018, Kansas City Councilwoman Teresa Loar proposed a new city ordinance that would affect panhandlers. The ordinance did not mention panhandling (likely to avoid constitutional arguments), but it would have mitigated panhandling under the guise of traffic safety. It would have only allowed people to stand on medians, roadsides, and highway exits for as long as it takes to cross safely (*The Kansas City Star* Editorial Review Board). This ordinance would have effectively banned much of the panhandling that happens in the city, while protecting the city from accusations of violating peoples’ First Amendment rights. However, at that same time, another major political moment in Kansas City was playing out. Former Mayor Sly James had reached his term limit, so Kansas City was electing a new mayor, with no incumbent, for the first time in eight years. Quinton Lucas was a mayoral candidate who opposed the proposed ordinance. In a blog on his campaign website, he expressed concern that the ordinance was vague in its language regarding the time people are allowed to remain at intersections, and that it “criminalizes a broad swath of legal activity” like panhandling, but the ordinance could also be used against other people exercising their First Amendment rights, perhaps through peaceful protest. Lucas won the mayoral election, and in Kansas City, the mayor can veto city ordinances, so the proposal failed. Regardless of the fate of the proposal, its existence and support by many council members still speaks to the attitudes of many Kansas City legislators towards panhandlers. It seems that there are legislators who will do anything that they can to restrict panhandling in the city short of violating the US Constitution by directly banning it.

According to the existing city ordinance, passive panhandling is the only legal form of panhandling on the Country Club Plaza. However, even passive panhandling is prohibited within twenty feet, in any direction, of any commercial establishment, office, financial institution, residence, or dining area. The problem with this prohibition is that the Country Club Plaza is a commercial outdoor shopping center composed almost entirely of storefronts and restaurants, with some banks, ATMs, and residential buildings. Anyone who has ever been to the Country Club Plaza, or at least knows what it is, knows that there is no area on the Plaza that is not within twenty feet, in any direction, of any commercial establishment, financial institution, residence, or dining area. So, this ban of all panhandling, including passive panhandling, within twenty feet of those establishments effectively bans all panhandling on the Country Club Plaza. That means most, if not all, of the panhandling that occurs on the Plaza is technically illegal and gives Kansas City Police the authority to issue citations or forcibly remove panhandlers in violation of this ordinance.

Attitudes Toward Panhandling

Kansas City legislators are not the only ones with negative attitudes toward panhandlers. As *The Kansas City Star's* Mary Sanchez reports, the Plaza's management, which was Highwoods Properties in 2014, received social media backlash for handing out pamphlets advising shoppers not to give money to panhandlers. The pamphlets were dispersed by their security team and urged people to give money to reputable charitable organizations rather than panhandlers. Highwoods Properties stopped distributing the pamphlets as a result of this backlash. These actions highlight the negative attitude the Country Club Plaza management team has on the panhandlers in the area. Perhaps they feel that the panhandlers disturb the aesthetic they work so hard to create in the Country Club Plaza, or perhaps they feel it causes their main customer base, the upper middle class, some sort of discomfort.

Patrons of the Country Club Plaza also have mixed feelings about the panhandlers. Resident Jeff Wartner said, "More often than not, they're friendly, but I definitely don't want to be harassed when I'm walking down the sidewalk" (Vaughn). Although he was not unkind about the panhandlers in the Country Club Plaza, he did not shy away from expressing his discomfort about dealing with them when he shops. UMKC student Celia Edmond was featured in the same article and commented on the sheer number of panhandlers in the area; "I'm

originally from [Las] Vegas and I've never seen so many people ask for money and hold up signs" (Vaughn). While neither interviewee expressed blatant disdain towards the panhandlers in the area, it is clear that they would both consider them a problem. It is intriguing that someone from such a big city, with a relatively high concentration of wealth, such as Las Vegas, would be so taken aback by the number of panhandlers in Kansas City. It begs the question, does Las Vegas not have panhandlers? Initially, I thought that perhaps Las Vegas might do something different to control panhandling, but according to a publishing on TripAdvisor by user Gizmo2004, "In Vegas, there are beggars at practically every traffic light and on most of the walkways crossing the footbridges on the strip." In fact, Las Vegas legislators must consider the presence of transient populations on public streets a problem, because they recently passed a controversial ordinance restricting "encampment." However, the ordinance restricts more than just encampments, the language in the ordinance prohibits just sitting or lying down on a "public right-of-way" (Chapter 10.86.010, Las Vegas Municode). So, in effect, this ordinance could restrict panhandling in the area as well. This legislative reaction is not just unique to Kansas City or Las Vegas, the National Homelessness Law Center has challenged ordinances that restrict panhandling in 260 cities across the country (NHLCC), so ordinances like these are extremely widespread.

Panhandling and Culture

There is a consistent pattern of negative attitudes toward panhandlers evident in the legislation regulating panhandling, the managing body of the Country Club Plaza, and the Plaza's patrons. These negative views could stem from the perception of Kansas City residents and legislators that panhandlers represent a counterculture, defined as a subculture that rejects some of the larger culture's norms and values (Keirns 63). In *The American Midwest: An Interpretive Encyclopedia*, Midwestern culture is characterized by "a general focus on hard work, respect, and politeness" (Sisson 24). These Midwestern values could be the reason for people's negative reactions toward panhandlers. When residents of Kansas City refuse to even acknowledge a panhandler, much less give them money, this reaction is predicated on the Midwestern value of hard work. Perhaps these people believe that money should be earned through hard work, and they do not see panhandling as hard work. Because the value of hard work is so ingrained in Midwestern culture, people can start to view suffering from extreme poverty, as many panhandlers do, as some sort of moral deficiency. In addition to this, many of the behaviors

that some (but not all) panhandlers exhibit, such as verbally asking for money and shouting at people on the street, would be considered impolite or disrespectful to the Kansas City/Midwestern dominant culture. In that way, the panhandler counterculture seemingly rejects the dominant culture's emphasis on hard work, respect, and politeness.

One might wonder, is it not impolite to ignore people the way many Kansas Citians ignore panhandlers? That is true, but I believe that this hypocrisy is the consequence of the dichotomy between real culture and ideal culture. In *Introduction to Sociology 2e*, this concept is explained using the analogy of teen pregnancy in the United States: "American teenagers are encouraged to value celibacy. However, the number of unplanned pregnancies among teens reveals that . . . ideal is hard to live up to" (Keirns 57). For Midwesterners, Kansas City natives included, the values of hard work, respect, and politeness may be hard to live up to. For example, in any other situation, it would be considered impolite and disrespectful to completely ignore someone who speaks to you on the street, but it is appropriate to treat panhandlers in this manner. This feeling that panhandling goes against the grain of Midwestern values does not extend to all panhandlers, just the stereotypical panhandlers on the Country Club Plaza. Thinking back to the example of the St. Vincent Academy schoolchildren, their version of panhandling does not seem to be perceived as an attack against these Midwestern values. Perhaps it is their shiny young faces and clean pressed uniforms that keeps away the judgment of others. Regardless of the reason there is a marked difference in how Kansas City perceives our stereotypical and non-stereotypical panhandlers.

As Nathan Kierns notes, "Breaking norms and rejecting values can lead to cultural sanctions such as earning a negative label—lazy, no-good bum—or to legal sanctions, such as traffic tickets, fines, or imprisonment" (57). In Kansas City, panhandlers are subjected to both of those types of consequences. For reasons previously discussed, many Kansas City citizens have negative views on panhandling. Resident Brenda Woodson was interviewed for a KSHB news article on panhandling on the Country Club Plaza, and she said, "I should not be assaulted by people asking for money when I go out for an evening to enjoy myself" (Vaughn). Although few would likely venture to classify panhandling as "assault," this comment is important because it speaks to the incredibly negative perception many people of the dominant culture have of panhandlers. This results in the social alienation of the panhandlers — people averting their eyes or avoiding them on the street. As if

that was not punishment enough, Kansas City has legislation in place to criminally punish people for practicing panhandling in certain areas.

Although there is evidence that in Kansas City panhandlers are viewed as members of a counterculture by the dominant culture, I do not believe that is necessarily the case. During my visit to the Plaza, I spoke with a gentleman who was panhandling on the sidewalk outside Barnes and Noble. When I started talking to him, he told me about his situation; he said that he has cataracts and is losing his sight, which makes him unable to work, so he was on the street trying to get enough money to eat and have a place to stay while he waits on his disability check. Throughout our visit, he assured us that he would be on his feet soon and that this was a temporary situation. I got the sense that he was there out of circumstance and not by choice. He was not choosing to reject the dominant culture's emphasis on hard work. Moreover, the fact that he felt the need to justify to me why he could not work was evidence that he does indeed value hard work. Overall, it did not sound like the testimony of a man who does not value hard work. I am aware that this singular interaction provides only anecdotal evidence that panhandlers do not reject the dominant culture's value of hard work. However, based upon my experience with him, it is my belief that he, and likely many other panhandlers like him, actually share the value the dominant culture places on hard work instead of rejecting it like the dominant culture seems to believe. He also seemed to value respect and politeness, like the dominant culture reportedly does. Throughout our interaction he was very polite to me, and he spoke highly of Kansas City's residents as a whole, saying that many of them are kind and willing to help out, although he did admit that many do not even want to give him the time of day. Considering my interaction with a Country Club Plaza panhandler, I did not get the impression that he or his community reject the dominant culture's emphasis on the values of hard work, respect, and politeness. As a result, I think it would be inaccurate to describe the panhandlers of Country Club Plaza as a counterculture.

This is not to say that the panhandlers of Kansas City do not share a culture, but I would describe this culture as a more general subculture rather than a counterculture. Nathan Kierns describes a subculture as "smaller cultural group within a larger culture; people of a subculture are part of the larger culture but also share a specific identity within a smaller group," and culture as "the shared behaviors and beliefs of . . . people" (62, 69). People who panhandle in Kansas City are a group of people who share a similar lifestyle, engage in the same behaviors,

and often interact with each other, so by this definition, panhandlers in Kansas City represent a subculture.

Conclusion

To many Kansas City citizens and legislators, the transient panhandlers of Kansas City's Country Club Plaza represent the city's greatest unacknowledged eyesore. This negative attitude, which is not applied evenly to all acts of panhandling, is reflected in the current and proposed laws regarding panhandling. The city's determination to mitigate panhandling despite it being a constitutionally protected practice speaks to the culture of Kansas City. The negative attitudes toward these people does not end with legislation; it continues with the response of Country Club Plaza's management and shoppers. These negative attitudes stem from the dominant culture's misguided perception that panhandlers represent a counterculture: a subculture that rejects the ideals and values of the dominant culture. Although the panhandlers do represent a subculture, that subculture does not necessarily reject the values of the dominant Kansas City and broader Midwestern culture. This misguided understanding of the values panhandlers represent is the consequence of differences between ideal culture and real culture. It is important to investigate how a region's culture affects its people, all of its people, to ensure that everyone is treated fairly and with respect. Although this misunderstanding is difficult to correct, it is important context in understanding panhandlers so that individuals can attempt to correct their misconceptions and treat panhandlers with the respect they deserve.

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From Decrepitude to Diamonds: The Value of Preserving and Repurposing Historic Buildings in the Kansas City Area

By Anna Ryan

Step into the University of Missouri-Kansas City's Scofield Hall on any given day, and you'll be overtaken by a somber hush. The arching windows, ornate chandelier, sweeping staircase, and grand hearth all speak to the elegance of the former mansion constructed by Kansas City businessman Walter Dickey over a century ago (Bomgardner). Upon first entering each semester, I feel a sense of intrusion, like my very presence is staining the opulence of the establishment. But as the semester draws on, I begin to feel a sense of familiarity. I'm no longer trespassing but taking part in the ongoing cycle of social and structural remodeling. Every year, the building receives upgrades of some sort; plumbing systems are improved upon or replaced, what used to be bedrooms are reappropriated to become classrooms and offices. All of these changes are slowly but surely grafted into the fabric of history, redefining the purpose of the building, repurposing it to suit modern needs, and reestablishing it as a necessary and central component of the UMKC campus.

Scofield Hall is just one example of a historical building in Kansas City that rather than being torn down has been adapted to be relevant to the needs and interests of its patrons over the years. While historical buildings in the Kansas City area may seem socially and structurally obsolete, they should be preserved and repurposed to fit the values and desires of the community and to prevent the erasure of the past. In this essay, I will first discuss the personal, economic, and social benefits of historic preservation. After that, I will offer insight into the argument against historical preservation and explain how such ideologies are detrimental to the progression of society.

Benefits: Personal Growth, Economic Stimulation, Social Mobility

Personal Growth

The benefits of historic preservation can be broken into three categories: personal, economic, and social. The personal benefits are less tangible than the others but are no less real. Historical buildings such as those found in the Kansas City Metro area have significance accrued through existence. Oftentimes, the tendency is to think of them as signposts of the past rather than active vehicles to transport us to the past. While the repurposing of old buildings does indeed imbue them with a greater degree of relevancy, their very existence in the heart of urban microcosms carries weight. Structures such as Union Station and the World War I Museum are continually updated to provide new content but still proffer a great deal, solely on the basis of their solemn, antiquated architecture and the sheer grandeur of their construction. According to a study published by the journal *The Urban Lawyer*, “A third [direct benefit] is the promotion of public history: public understandings and meanings that come through daily confrontation with history as manifested in the built environment” (Tipson 294). In this way, historical buildings do not have to be redeveloped with an overtly instructional purpose, such as a museum. Rather, their existence serves as a testament to the time period of their origin and provokes people to think upon the history and values that they represent. A study by Stewart Brand revealed similar findings: “The older a building gets, the more we have respect and affection for its evident maturity, for the accumulated human investment it shows” (Meeks 7). Just like with any good map, in order to know where we are going and how to get there, we must first examine where we are at now and where we came from. Historic buildings supply us with the direction needed to propel ourselves into the future, both as a society and as individuals.

Economic Stimulation

While these personal benefits of historic preservation cannot be precisely quantified, the economic benefits can. Whether you have lived in Kansas City your whole life, or you have only recently moved for a career or education, the diversity and magnitude of the local population undeniably permeate the fabric of the town’s identity. These factors could be quite easily attributed to the handful of universities the city offers or its convenient placement next to interstate highways, but a more conclusive explanation could be the history present in all avenues of the area. Stephanie Meeks explains why so many people are drawn to specific large cities. “These sorts of landmarks [like Main Street or the old public square] are

the lifeblood of our communities. They help make them feel like someplace rather than anyplace, and in the 21st century, that distinctiveness is a tremendous social, economic, and environmental asset for your community” (Meeks 7). In the context of Kansas City, this could include any of the at least 45 historical landmarks in the area such as Union Station, the WWI Museum, and the Country Club Plaza (“Historic Sites”).

Meeks discusses authenticity and how individuals seek out physical and social locations that do not fit into the “cookie cutter” shape of the typical urban city. She also notes a 2014 survey conducted by an architectural firm of six of the most highly populated cities in the United States: Austin, Boston, Chicago, New York, San Francisco, and Washington, D.C. The survey asked 1,000 residents in each of the cities what they loved about where they lived. Almost two-thirds of residents said they “liked to stop and admire historic buildings while walking around” (Meeks 7). This response surpassed the other 19% of people who liked the modern buildings or the 15% of people who enjoyed the skyscrapers (Meeks 7). Greater population density in these areas—and in any areas with an abundance of historic buildings—stimulates the economic and job markets in addition to giving more opportunities to small businesses and minority-owned businesses. History is part of what elucidates the character of an area, and without history, a city lacks the authenticity that attracts countless people and businesses.

This encapsulation of character can be evidenced in Kansas City’s very own Union Station. Designed as a train station, it opened in 1914, but over the course of multiple decades began to lose its relevance to the needs of the nearby residents as well as its ability to function proficiently compared to newer architectural and technological innovations that were taking place. It was not until January 1998 that renovations began to transform the space into the Union Station we know today, complete with Science City, IMAX theater, planetarium, and restaurants. While these renovations were taking place, reporter Jilian Mincer wrote, “The museum is expected to attract a million visitors a year and add close to \$8 million to the metropolitan area’s economy” (Mincer). Now, more than twenty years later, we can see that she was correct, as roughly 2 million people flock to the site annually (“Union Station”). Lisa Adkins, a chairwoman for the organization that financed the upgrades, observed, “[The project is] taking a piece of the city that was deteriorating and transforming it into a jewel” (Mincer). Preserving historic spaces in cities entices both individuals and businesses to settle into a given area. Taking it a step further by renovating these preserved spaces helps to generate cash flow

in communities, thus establishing a sustainable pattern of profit as well as ongoing social relevance.

Social Mobility

There are also other aspects like accessibility that are enveloped in the social benefits of historical preservation. Many buildings constructed decades or centuries ago were not designed to accommodate people who require the use of a wheelchair or walker to get around, or even people who are blind or deaf. Preserving these buildings as well as repurposing and remodeling them to meet current interests and needs enables them to have a further reaching impact. The Forney Library in Paris is one example. Construction on this library began in 1475 and was completed in 1519. Over the past centuries, it has endured much damage but has still been repaired and improved in many ways, such as adding a wheelchair ramp (Trunel 12). Along with physical accessibility, historical repurposing promotes greater social mobility and diversity. Meeks's article also cites a study conducted by the National Trust that utilized mapping technology, cell phone usage and photo uploads, among other sources, to examine different neighborhoods. The results of this study indicate how profound of an impact historical buildings can have on the communities they're situated within. Meeks writes:

What we found is that neighborhoods with a mix of older and newer buildings have a "hidden density"—more people and businesses per commercial square foot than areas with just new buildings. They also have more small business jobs, more creative jobs, more new and women- and minority-owned businesses, fewer chain businesses, and more diversity in housing costs, meaning more opportunities for families of all incomes. (Meeks 8)

Such "hidden density" translates directly into the job market, as Meeks specifies later on. The National Trust for Historic Preservation began a program called the Atlas of ReUrbanism to further analyze an additional 50 cities across the United States and to compare areas with only new buildings to areas with a mix of old and new buildings. These designations were determined by the different ages of the buildings, the median age of the buildings, and the size of the buildings and spaces ("The Atlas of ReUrbanism: Buildings and Blocks in American Cities"). In the areas

with smaller, older, and mixed-age buildings, new business jobs were up by 33% and small business jobs by 46%, compared to areas with larger, newer, and similar-aged buildings (Meeks 9). These mixed-age areas also have 75% more people of color, 60% more women- and minority-owned businesses, and 27% cheaper housing units (Meeks 9). The reality of the matter is quite straightforward: historical preservation is profitable in multiple ways in today's world. Historic buildings themselves already create a huge draw in communities large and small, as large swaths of the population are seeking authenticity and character in the place they choose to settle and establish their lives. Repurposing historical buildings and allowing them to coexist with the present is, in fact, the most effective way of promoting social and economic equality and diversity. Refusing to recognize the social weight that preservation and repurposing carry is a refusal to adapt to meet the needs of society. Right now, the demand upon society isn't specifically for old buildings, but for positive change. In this way, historic preservation is not the goal, but a means to an end of the far more pervasive objective of equality.

Aesthetic Posterity Over Historical Adaptation?

Oponents of historical preservation argue that the preservationist movement—while it does preserve some structures of immense significance—also fights too ardently to keep items that are of little historical relevance. Architecture critic Catesby Leigh provides the example of a trash incinerator in the Georgetown area of Washington, D.C. that dates to the 1930s. Its looming, boxy presence invades the otherwise serene Potomac River waterfront, and while developers are attempting to construct it into a modern hotel and entertainment area, they are faced with large architectural and financial obstacles (Leigh 40). Leigh explains how “the city’s historic preservation board has categorized the incinerator and its smokestack as a ‘contributing element’ of Georgetown’s historic character. So, the developers have gone to enormous lengths to protect these useless relics” (Leigh 40). The crux of Leigh’s argument is that preservationists are incapable of discerning items of historical significance from those that are simply old—the “wheat from the chaff,” as he calls it (Leigh 40). This lack of discernment explains why many dilapidated and scarcely-visited buildings are still maintained or why exorbitant funds are poured into attempting to remodel them to acceptable standards. The article concludes with Leigh’s final thoughts on the whole debacle: “To the extent preservationists have convinced themselves that America is just one big museum of ‘material culture’ . . . they are helping make America uglier” (Leigh 45). While

the author does make a valid point that many buildings—sometimes ugly ones—are preserved needlessly or with no profit, they present a false dichotomy of the argument. Under Leigh’s reasoning, America’s only two options are to demolish all “obsolete” buildings and replace them with new ones (the modernist school of thought) or to tediously work to preserve every single historically significant monument (the preservationist stance). In reality, there is quite a bit of fluidity and compromise to be had between these two propositions. We do not need to feel the obligation to side one way or the other, because to present society with only these two options is unfair.

Ronald Morris presents an academic perspective on the issue. He notes, “Historic buildings were designed by people who expected to use them for their entire life rather than discard them at the end of a decade” (155). This comment illustrates the principle behind the decision we are now faced with. If the economic interests are *truly* at the core of the issue, then it would be most cost-effective to wisely invest the given funds. More often than not, that means working with what is already present rather than starting with a blank slate or, even worse, wasting the time and money to completely raze a structure to the ground and then build something entirely new. Leigh does have a point that structures like the Georgetown incinerator would probably be better left in history books and photos than in a physical brick building. That is because it is clear that its social use and relevancy has long expired, and to preserve it is most likely not the best course of action. What we need to do is preserve the antiquity of buildings and the history they communicate while also repurposing them to be tailored to the needs and values of ever-evolving society. In this way, we are ensuring their preservation as well as their profit. What should be inherent in this decision-making process, however, is discernment and personal, economic, and social considerations. If this period of deliberation reveals that it would not be profitable to repurpose a given building, then society will be better off. The purpose of this essay is not to dictate an absolute statement by saying that all buildings should be preserved, or even that all historic buildings should be repurposed. At the heart of this subject is the necessity of careful, calculated thought and diligent, diverse collaboration.

Conclusion

In the end, Scofield Hall, Union Station, or any number of historic buildings command a certain level of respect and awe. While we may not have control over where they are placed currently, as we cannot go back in time, we do have control

over how we treat them and what we choose to value in society. We also have control over the time we take to carefully evaluate the worth of these buildings to determine their true significance and whether or not their continued existence is profitable. If we are to effectively progress into the future, we must have a thorough and present understanding of where we have come from: the past successes and discoveries that have propelled us, and also the failures and blunders that we should learn from. As time marches on, advancements will be made. Items will be replaced, systems will be improved upon, spaces will be reappropriated. During this time, we have to choose between intentionally adapting these historical structures to meet current needs and interests, or to neglect them until they fall prey to irrelevancy and decrepitude. History is a commodity that is difficult to come by in the midst of society's frenetic advancements into the future. It is our responsibility to steward this commodity well and sometimes that means diligently repurposing historic spaces to ensure their continued survival; other times that means knowing that the most profitable decision would be to destroy a building and begin anew.

As we have seen, Scofield Hall on UMKC's Volker campus exemplifies the principles of historical preservation and adaptation that must take place in the Kansas City area and across the United States. Historical preservation presents numerous personal, economic, and social benefits that enrich communities and help propel our nation forward into the future. Though it may seem counterintuitive, preserving key pieces of history and repurposing them is the best way to affect social change and produce greater levels of equality and diversity in communities everywhere. While critics may assert that preserving buildings enables the continued existence of "ugly" or irrelevant structures, the fact is that we are not faced with a dichotomy between preservation and progressivism. Though unnecessary old buildings may exist, and though organizations may fight with a brazen ardor to preserve them, this does not nullify the validity of why historical preservation is pertinent and profitable in today's world. Adapting historic buildings is the only effective course of action that will sustain the rich chronicles contained in these countless old buildings and also allow our country to move onward without the shackles of obsolete architecture *and* unnecessary intellectual dissension.

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Intersex Adolescents and Medically Accepted Abuse

By Lillian Taylor

What would you do if your country wanted to make your identity disappear? If it wanted to erase the very definition of you, considering your identity to be a harmful disorder, and concluding that you should not be seen nor heard. What if your government allowed doctors to decide at birth that you require surgical correcting? Although you yourself are not illegal, you are so taboo that your biology is deviant. What would you do? Pretend to be someone you are not? Change? Many Americans can relate to being ostracized for a trait they cannot control. People of color and the LGBT+ community have experienced struggles that invalidated their existences and silenced them for centuries. This could not be truer than for one overlooked minority: intersex.

Intersex people are a sex minority defined by their biological deviation from sex binaries. Not every intersex person has ambiguous genitalia, but the ones who do are often victims of medical discrimination, having to go through a procedure called Intersexual Genital Mutilation (IGM) to “normalize” their genitalia. It is estimated that 1 in 2,000 children are born with ambiguous genitalia and are at risk for IGM (“Gender and Genetics” para. 18). This procedure has been pervasive for decades, even though it has been proven to be psychologically and physiologically damaging. The United States needs to ban intersex genital mutilation to protect the mental and physiological health of intersex minors.

Intersex definitions

Sex is often thought of as a binary. You are either a male or a female, and your chromosomes inherently determine your sex. There is no in-between. Chromosomes often effect sex, but they are not always the determining factors. Not everyone has two sex chromosomes: some people only have one (sex monosomy) and some can have more than two (sex polysomy) (“Gender and Genetics”). Although most people are either XY males or XX females, there are different combinations of sex chromosome compliments: X females, XXX females, XYY males, 49XXXXXY males, and many more (“Gender and Genetics”).

Normally, the Y chromosome acts as an inducer of the male genotype (an organism's complete set of genes) which usually expresses itself phenotypically (with observable characteristics) by developing male sex organs ("Gender and Genetics"). For example, an XXXXY male will be phenotypically male because the Y chromosome is responsible for the development of testes despite having four X chromosomes ("Gender and Genetics"). Certain mutations can cause the fetus to deviate from this binary in the sex-determining region on the Y-chromosome. This mutation can result in multiple conditions such as XX males, XY gonadal dysgenesis, XY females, and defects in androgen biosynthesis ("Gender and Genetics"). Defects in androgen biosynthesis is when the body rejects male hormones, making it so they do not develop male sex organs, and they do not go through male puberty ("Gender and Genetics").

The physical appearance of intersex can vary greatly between people. A person with Androgen Insensitivity Syndrome has a body that rejects male hormones—androgens like testosterone—leaving them with a phenotypically female body despite having XY chromosomes ("Gender and Genetics"). So, although their genotype says male, their body expresses a female phenotype. This means that they will have female sex organs and develop breasts despite being genetically male ("Gender and Genetics"). Some intersex people have ambiguous genitalia—the combination of male and female sex organs—which is also medically known as "'true' hermaphroditism" ("Gender and Genetics"). In these cases, a person with "true" hermaphroditism will have a combination of both mature ovarian and testicular tissue, which can vary in appearance from person to person ("Gender and Genetics").

History of Intersex Surgeries

People in the US often believe that we are against genital mutilation. Many of us cringe at the thought of female circumcision, condemning other countries that do it, calling it a violation of a woman's rights. At the same time, we regularly perform circumcisions on baby boys who similarly do not have the right to choose. Culturally, we have thoughts about what parts of our genitals are acceptable and what are not. If something is considered abnormal, we find ourselves pressured to change it. When it comes to intersex people, we see a natural occurrence as abnormal and needing to be "fixed," but our "fix" can later be both psychologically and physiologically damaging. In the US, if a child is not born "perfect," we change them.

Medical doctors are put in a position where they can use their power to help or hurt intersex individuals. When a parent is panicking about their newborn, a doctor might be the first place they look for advice, especially if they do not have prior knowledge about intersex people. A doctor's recommendation might be the only one they get, so that authority ultimately influences a parent's choices. John Money was one of the first doctors to create what he thought was a solution to the perceived problem of intersex people (Davis 58). He believed that a person's environment was more influential than their biology and that a person's gender is determined mainly by post-natal factors like upbringing and sex-roles (58-59). He and many others thought that if you assigned a gender at birth, surgically shaped the genitals to correlate, and socialized the infant to that assigned gender, a child could live a normal life as their newly assigned sex (59).

One of Money's most famous subjects was David Reimer. In the 1970s, David and his twin brother had to be circumcised due to a condition called phimosis, which made it difficult for them to urinate (Davis 61). David's penis was irreparably burned from the surgery, so his parents were referred to John Money (61). Money's team constructed a vagina using what was left of David's penis (61). Applying Money's theory, if David had the surgeries and his parents socialized him as a girl, he would end up "normal," growing up as the opposite sex (59). For 25 years, David's case was triumphed as an example of how sex-reassignment should be performed, influencing thousands of doctors and parents to perform similar procedures on their intersex children (62). It was only years later that, due to his sex change, David revealed that never felt comfortable as a girl; John Money's recommendation trapped him a body that he knew he wasn't supposed to be in (62). David only looked back on his life with shame, as he said in an interview:

If I were raised as a boy, I would be more accepted by people. I would have been better off if they had just left me alone, because when I switched back over, then I had two problems on my hands, not just one, because of [their] trying to brainwash me into accepting myself as a girl. So you got the psychological thing going in your head. When I am intimate with my wife it sometimes haunts me (62).

He was reported to often brood about his traumatic past (Colapinto). This mixed family history of clinical depression, his brother dying, and marital difficulties

brought him to the point of suicide (Colapinto). The extreme psychological impact the surgery had on David cut his life short. He never had a say in his own anatomy, and Money completely disregarded how he would identify as an adult. From the beginning, he was put into an unfair situation, and his perceived experience was used as justification for doctors to continue pushing IGM on intersex people. His story discredits the notion that you can successfully socialize a person to be a gender they do not identify as.

Although John Money's theory was proven to be psychologically and physically damaging, the practice of intersexual genital mutilation still prevailed. Instead of relying on Money's interpretation of intersexuality, doctors framed intersexuality through a biological lens that medicalized intersexuality (Davis 67). According to Georgiann David, they adopted the term "Disorders of Sexual Development," reframing intersex as a "medical disorder that necessitates medical attention" (69). He explains that doctors at the time "went so far as to compare intersex traits to dangerous diseases, despite the fact that most intersex traits have minimal, if any, health risks" (69). Davis found that, although it is widely known that IGM is unnecessary and damaging, doctors continue "to be invested in surgical modifications on intersex bodies" (78-79). Doctors had created a new disorder to treat, which led to the prevalent belief that intersex people need surgeries no matter the cost.

The Debate

Many doctors in the United States recommend medical interventions to feminize intersex infants through surgery ("Gender and Genetics"). Like John Money theorized, many doctors believe that it will be easier for a child socially and psychologically to make them conform to gender binaries. Despite many doctor recommendations, research discredits that idea. According to the World Health Organization: "There is no evidence that feminizing genital surgery leads to improved psychosocial outcomes; feminizing genital surgery cannot guarantee that adult gender identity will develop as female; and that adult sexual function might be altered by removal of clitoral or phallic tissue" (20). The child does not benefit from doctors and parents forcing an unwanted binary on them. The Human Rights Watch denounces intersexual genital mutilation, stating that, "The risk of assigning the wrong sex can be up to 40%" ("I want . . ."). Doctors decide to perform IGM on infants disregard how the child may identify in the future. Forcing a sex onto

an infant can often do more harm than good because their identity will not match their genitals.

These surgeries can also leave a lifetime of physical damage. The Human Rights Watch explains that these surgeries can lead to chronic pain, nerve damage (numbness), scarring, and lifelong hormone replacement therapy for children who have their gonads (testes or ovaries) removed (“I want . . .”). While not every patient experiences physical damage, these are all still major risks. A child should not be put through unnecessary surgeries that undermine their identity and damage their physical health just for an aesthetic ideal.

Since IGM is often performed on infants, parents make the decision. Doctors often state that parents should have the right to request that their child have a sex change. The California Medical Association opposed a bill that would eliminate intersex genital mutilation, stating that “the government should not legislate medical decisions or interfere in the difficult decision a parent makes in consultation with a doctor” (Gutierrez). They believe they are properly informing parents, providing consultations with multiple doctors before proceeding with surgery, and that nothing should be banned (Gutierrez). This is under the guise that parents are properly equipped and educated enough to handle this life-changing decision for their child—that they will be shown more than one side. In reality, parents are not being shown the full picture.

When a parent meets with these teams of doctors, they are often in a room where every opinion is the same: pro-surgery (Davis 77). Parents are put in an echo-chamber where they are told that each doctor is a “second opinion,” but none deviate from each other’s beliefs (77). Studies have also shown that parents were “less likely to grant consent for surgery when a psychologist presented the intersex trait in a demedicalized fashion than when an endocrinologist presented it in a medicalized fashion” (77). The way doctors currently present intersexuality paints it to be this terrifying medical obstacle.

The Lohmans went through this exact situation with their child Rosie. They were panicked when they realized that Rosie was intersex (Emanuel). Three days after she was born, the Lohmans met with a dozen specialists to discuss the steps they would need to take if they wanted their baby to be “normal” (Emanuel). They were only presented with two options: “They could reduce the size of Rosie’s clitoris and create a vaginal canal, or solely do the vaginal canal surgery” (Emanuel). Only two possibilities. They were never once told that they could just not do the procedure (Emanuel). When the Lohmans suggested not getting surgery, their

doctor falsely claimed that not performing IGM could cause Rosie “psychological trauma” (Emanuel). Not a single doctor offered the other side. Doctors pressured Rosie’s parents until they put their foot down and said no (Emanuel). The Lohmans’ experience showed that parents are pressured into these surgeries (Emanuel).

Using words such as “disorders of sexual development” can further push this fear in parents’ minds, thinking there is something wrong that must be fixed. When using medicalized terms in cases of identity, the implication is that there is something dangerous about them. Parents need a true second perspective—someone who will disagree with the common notion that intersex people are deformed. When a parent must make as big a choice as getting their baby a sex change, it is important that they are able to know that they can say no.

The Kansas City Connection

In Kansas City, organizations such as KC Care have focused some of their attention on providing quality care to people who are intersex and transgender since 2017 (Lam 47). With their new services, they hope to reach out to gender-queer individuals, providing gender-affirming hormones and legal resources (49). This can be a huge step for intersex people who were victims of genital mutilation to take back their identities. If they desire, they can get help on changing their names and getting hormones that can help them transition to the gender they identify as. Children’s Mercy Hospital has also taken steps to provide quality care to trans and intersex patients. With their Gender Pathway Services, they can provide care to gender-variant children (“Gender Pathway Services”). Kansas City is making great strides towards becoming more accepting to intersex youth, which includes the hospitals that are starting to push for better treatment of intersex individuals.

But there is a lack of community in Kansas City. It is nearly impossible for an intersex person to find others like them. Of course, like most cities, Kansas City has organizations dedicated to the LGBT+ community, but with such a small percentage of people being intersex, it can still be difficult to find intersex people within those groups. Not only that, but not all intersex individuals consider themselves to be a part of the LGBT+ community, making it important to set up groups specifically dedicated to intersex people (Leggette). Intersex people face discrimination that not many other groups face, so it is important that they are able to find support and understanding from people like them. Building a group for intersex people can provide the support people need to reclaim their identities.

Conclusion

In the end, a parent should not look at their newborn and think they need to change them aesthetically. If a child is born with big ears, the first thought is not to get them ear pinning surgery. If a child is born black, the first thought should not be to bleach their skin. So why do we put so much emphasis on having “normal genitalia”? Americans believe in binaries, so anything that goes against them is seen as deviant. We have deep-rooted beliefs of what makes a man a man or a woman a woman. We try to fit intersex people into boxes. As a result, we have created a culture of intersex discrimination. Intersex people deserve better. They deserve a say over their own bodies. It is time that we call it out for the damage it has caused both psychologically and physiologically and put a stop to this medically accepted abuse.

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The Promise of Progress: Apollo and American Values

By Johnny Waggoner

As much as any human enterprise, science needs stories—to portray its origins and development, to glorify its heroes, to dramatize its methods and values, and to proclaim its place in human civilization.

—Gregory Schrempf, *The Ancient Mythology of Modern Science* (15)

The Apollo missions are a collection of stories that hold a deserved spot in the American (and global) cultural mythology. Like any good story or myth, the moon landings feature compelling heroes, a quest fraught with peril, and a visionary leader who set a goal which the people worked together to achieve. They feature a capable and necessary antagonist in the form of the Soviet Union, without whom there would have been no “space race” and no need for the United States to establish a sense of national prestige by beating the Soviets to the moon.

In *Classical Mythology in Context*, Lisa Maurizio claims of myths, “Whatever meanings they hold is hidden in plots, metaphors, and symbols. It is never explicit” (14). As with myth, it seems that the meaning of NASA’s achievement to modern society is elusive and up for debate. Imbued with political, philosophical, and even religious significance, the Apollo missions are enigmatic historical events that warrant inspection from historians, mythologists, and scientists. Even now, with over fifty years of discourse dissecting every aspect of Apollo, the most eloquent of commentators seem to struggle to express precisely what the act of placing men on the moon means or should mean to our society. Apollo has left a lasting impression on the American public consciousness, and one must delve into the stories and symbols of Apollo and the literature that it produced to investigate this impact. Placing the story and symbols of the Apollo Program under a microscope once more not only reveals characteristics of its mythos and the philosophies that branched from it, but also illuminates its contributions to the American value

system of the twenty-first century. In contrast to its sociocultural implications, Apollo and the technologies it birthed have done little to create positive and lasting change for humanity. Though future events may change our perspective on the Apollo Program, the unfulfilled promise of scientific and technological “progress” characteristic of Apollo is perhaps as significant as its achievement.

To understand the legends surrounding Apollo and why it is important to the modern United States, the context of the “space race” is a good place to begin. Gregory Schrempf notes: “A number of connotations of myth stem from patterns or structures of coherence that typically arise in such mythological stories or that form the backdrop—the worldview—of such stories,” (15). The present worldview points to the pioneering US spirit and scientific exploration as driving forces behind the Apollo program. However, our progenitors who fashioned the classical myths might find it appropriate that arguably the greatest technological achievement in human history arose as a product of something quintessentially human: an ideological Cold War that, at its core, was about economic systems and spheres of influence. In their battle for geopolitical superiority, the United States and the Soviet Union turned outer space into a territory where the greatest “battle” of the Cold War would be fought. The Soviets landed the first blow with the launch of Sputnik on October 4, 1957 (Burwell 41-42).

With the launch of Sputnik, the cosmos grew to include space for the citizens of both the Soviet Union and America. The heavens immediately took on a significance to the layperson that they had not possessed since ancient times. The Soviet Union’s success required an American response. Jack Lule highlights how Sputnik transformed the American perception of outer space from a void into a meaningful construct that warranted the attention of our leaders:

The problem of course was the United States had not “settled” space first. Mircea Eliade found this kind of dread even in ancient myth. He noted that societies often assume an opposition “between their inhabited territory and the unknown and indeterminate space that surrounds it. The former is the world (more precisely, our world).” He said a group did not consider a space sacred until its own people had settled it, for “everything that is not ‘our world’ is not yet a world.” News about Sputnik presented this very drama. Success in space would be meaningful only in the context of U.S. experience.

Space, with Soviet satellites, was a threat; and so the accounts anticipated the settling of space with U.S. technologies as well as U.S. traditions and beliefs. (Lule 84-85)

The moon's prominence as the closest destination where a flag could be planted made it the obvious target for annexation by America. The "space race" was on.

There is little doubt that US President John F. Kennedy's goal to reach the moon "before the decade is out" was a strategic initiative with the goal of increasing American prestige that had been wounded by the Soviet Union's successes in space (Kennedy, "Moon Shot Speech"). Without those successes, it's possible that the American public would not have had any interest in space exploration. However, the "evils of communism" provided a powerful symbol that rallied the support of the American public toward Kennedy's space policy. Kennedy tells Congress,

We mean to be a part of it—we mean to lead it. For the eyes of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding.

Rita Koman observes that the language used by Kennedy is important: "Kennedy did not want to see the Soviets get to the moon first and govern it with 'a hostile flag of conquest' when American scientists and technology could put 'a banner of freedom and peace' there leading to 'knowledge and understanding . . . for the progress of all people'" (43).

Kennedy presents the United States as a bastion of freedom, peace, knowledge, and understanding, and perhaps most important of all, an agent of "progress." Kennedy's statement emphasizes that reaching the moon first and "colonizing" it with American beliefs and values was a significant bellwether of "progress" in the battle against communism. Koman contends, "It was a 'feel good about yourself' propaganda program for Americans. After Kennedy's untimely assassination, the project took on the aura of near-sacredness as President Johnson pushed for its completion in the name of the slain president" (44). This evolving gravitas and the ensuing success of Apollo earned the space program of the era a measure of veneration from the public, which only grows with time.

This veneration is suggestive of what Roger D. Launius describes in “Escaping Earth: Human Spaceflight as Religion” as the “civil religion” of human spaceflight. Launius traces the term “civil religion” to Rousseau and American sociologist Robert Neely Bellah, quoting Bellah’s assertion that there is “an institutionalized collection of sacred beliefs about the American nation” that involved “national self-worship” (46). Apollo’s success enables Americans to worship the positive consequences of our nation’s ideals. As Burwell writes regarding the openness of America’s space program with its television cameras and live broadcasts, “the international stakes were high, but in this case, the open risk-taking was cast . . . as proof of the righteousness of the American way of life” (43). NASA’s ability to fulfill Kennedy’s edict to reach the moon before the end of the 1960s becomes evidence of the superiority of American values—including Kennedy’s freedom, peace, knowledge, understanding, and progress—over those of the Soviet Union.

Lisa Maurizio maintains: “The content of a myth is composed of the religious, political, and cultural values and meanings about self, society, and cosmos that it offers, which are often hidden in a myth’s metaphors, symbols, images, and stories” (15). The Apollo program and its success thus serve as a foundational myth for modern American values and principles, helping Americans to identify themselves within the larger framework of the geopolitical landscape. As Koman writes, “the space program became the embodiment and expression of America’s core national values and aspirations” (42). As in Kennedy’s 1961 speech, these values and aspirations are always presented in the discourse of the time in opposition to those of the Soviet Union, demonstrating the “us vs. them” facet of the “space race.” In this model, the Soviet Union represents an archetypal antagonist against which the values of modern America could take shape.

Burwell specifies an important distinction made by Apollo astronaut Neil Armstrong (that he was representing the United States) in his conversation with President Richard Nixon upon landing on the moon: “While the success of Apollo is described . . . as transcending national boundaries, Armstrong’s reference to the fact that he is representing the United States emphasizes the fact that that the Apollo triumph was achieved by an American citizen” (44). Armstrong’s famous first words on the lunar surface might claim the success of Apollo as an achievement shared by all of mankind, but there is no mistaking that it was born out of patriotic, nation-based ideals. Without the climate of the Cold War and its militaristic arms race, the advancements that precipitated the Apollo program may never have

happened; and, moving forward, the scientific aspect of the space program would continue to take a backseat to its military applications.

Here it is important to note one of the primary purposes of myth, where its function is to “ameliorate or make enduring troubling differences and contradictions” (Maurizio 15). During an enigmatic “Cold War,” which was not a war but a competition between two opposing ideologies, Apollo perfectly bridged the gap between war and peace as a “peaceful” civilian program with military applications. As part of a technological arms race that was, in essence, a surrogate for war, the space program offered an avenue for America to assert power without ever firing a shot. Apollo serves, politically and culturally, as a definitive advertisement for the American value system—an ethos which values peace but spends more on defense than any other country in the world.

As Joseph Campbell discusses in *The Power of Myth*, the Great Seal of the United States is a perfect illustration of this opposition (33). In one claw, the eagle on the Seal holds an olive laurel, and in the other, thirteen arrows, symbolizing diplomacy and war, respectively. This duality is, of course, still evident in today’s politics. America’s aspiration to be an exemplary global citizen and ambassador for humanity with values of openness, democracy, and equality for all peoples must be reconciled with its self-image that is characterized by exceptionalism, self-worship, and manifest destiny. The steadfast belief in the superiority of the American way of life must be tempered by an awareness that democracy is not easily exported. Charles R. Wilson has written about the American public consciousness or “civil religion” and expounds upon the dissonance present in the “civil religion”: “One aspect of the civil religion has celebrated the American nation, its prestige, power, and tradition of achievement, but another dimension of it has summoned the nation to live up to its values of liberty and equality. Both traditions are rooted in the American democratic heritage” (211). Apollo is a modern myth because it integrates these two traditions. In beating the Soviets, the United States demonstrated its distinctive prestige, power, and achievement. The fact that no person has set foot on the moon since Apollo means the missions would be celebrated by all of humanity as a milestone achievement. This blurring of the lines between United States citizen and human being helps consolidate the United States’ position as global citizen number one and speaks to the idea that victory for the United States is equivalent to a victory for humanity, serving to spread the values of liberty and equality to all global citizens.

It's not difficult to understand why many Americans feel a sense of nostalgia for the days of Apollo. It was a time when the nation set policy goals in space and accomplished them for the entire world to see. However, in an examination of polling data from the time, Roger D. Launius concludes "These statistics do not demonstrate an unqualified support for NASA's effort to reach the moon in the 1960s . . . It also suggests that the public was never enthusiastic about human lunar exploration, and especially about the costs associated with it" (826). As for the modern space program, the polling data used by Launius seems to indicate that public support for the manned space program is an inch deep and a mile wide—widespread, but low on the list of concerns for modern Americans (823-825). Ball claims that this is because "the missions were framed from the outset as a "space race" against the Soviets, so the race was run once Armstrong made his footprints on the dusty lunar surface" (32). If support was and is not as prevalent as popular opinion would have us believe, the significance of Apollo today must be as a cultural point of reference rather than as an exhibition for manned spaceflight endeavors. It speaks to the US "civil religion"—the national identity, values, and place in the cosmos.

Launius highlights some hallmarks of religion that are present in the pro-space movement: "the practice of faith and worship, the existence of a set of beliefs inspiring reverence and allegiance, trust in an alternative arrangement of affairs that cannot be physically demonstrated, a frequent promise of immortality, an explanation of origins, and conviction in a message of salvation" (45). He posits that human space exploration shares these characteristics; with Apollo being the primary example of US success in human spaceflight, it functions as the origin of this "civil religion" and earns the space program the allegiance of society at large—and the reverence of the pro-space movement. The immortality aspect is satisfied by the establishment of the names of astronauts and mission control engineers in the historical record (and the certainty that any humans who colonize the moon or Mars will be immortalized in kind). The promise of salvation made by the "civil religion" of manned spaceflight is that humanity as a collective will be protected from environmental catastrophes or other "acts of God" if we manage to colonize space. Launius adds, "Such a belief system addresses deep-seated needs that strike to the confluence of the scientific pursuit of knowledge and the philosophical understanding of humanity's place in the universe" (46). As a modern myth that is essential to the "civil religion" and belief system of mainstream Americans, the Apollo program redefined Americans' understanding of their place in the universe.

The high priests of this “civil religion” birthed by Apollo are the astronauts. Just as science needs stories like Apollo to establish its place in society, Campbell tells us society needs heroes “because it has to have constellating images to pull together all these tendencies to separation, to pull them together into some intention” (163). The astronauts were the heroes of the Apollo-era space program. Burdened with the dangers of spaceflight and blessed with the status granted to the early pioneers of space travel, the Apollo astronauts were the representatives of the American value system on the “final frontier” and put a human face on the American space program. This was no accident. There was an intentional emphasis placed on the stories of the astronauts by NASA and the press, as they were compelling and sometimes enigmatic heroes (Launius 174). The spotlight was on them as they carried the dreams and aspirations—and fears—of the nation into space.

The heroism of the astronaut is perfectly captured in *The Power of Myth*:

They’ve moved out of the society that would have protected them, and into the dark forest, into the world of fire, of original experience. Original experience has not been interpreted for you, and so you’ve got to work out your life for yourself. Either you can take it or you can’t . . . The courage to face the trials and to bring a whole new body of possibilities into the field of interpreted experience for other people to experience—that is the hero’s deed. (Campbell 49)

As the men that would make the journey to the moon, the astronauts introduced a whole new range of experiences and possibilities for modern humans. The defining symbol of the Apollo program would become the heroic astronauts in their space suits, risking their lives “to defeat the ominous specter of communism” (Launius 181).

The astronauts were the perfect heroes for the cultural climate of mainstream America in the 1960s. Charles Reagan Wilson remarks: “Although predominantly secularists, participants in the Apollo program tied religion to their efforts in a surprising way. One can see elements of both a rational religion, which can be traced through American roots back to the Enlightenment, and an evangelical religion, which has been the nation’s culturally dominant religious force throughout most of American history” (210). Like founding fathers such as Benjamin Franklin and Thomas Jefferson, the astronauts were scientifically capable, but God-fearing

and patriotic, comfortably standing astride the sometimes-incongruent ground between faith and science, between rationalism and religion.

In *Heroes in a Vacuum: The Apollo Astronaut as Cultural Icon*, Roger D. Launius links the astronaut back to mythical figures George Washington and Cincinnatus: defenders of the nation, honorable citizens who were the best of what the nation had to offer, serving their country not for adulation but for the good of the civilization: “When victory was assured, he would return to his quiet life” (193-194). In addition to defender of the nation, Launius separates the mythology of the astronaut into four more aspects, most notably the astronaut as “everyman.” He writes, “Like the myth of any American child being able to grow up to become president, anyone could become an astronaut. Diligence, excellence in school, and an unfaltering devotion to national duty were all that was necessary” (195). This equality of opportunity is essential to the modern American value system.

Central to the mythology of the astronaut as “everyman” is the symbol of the astronaut in his spacesuit. The only thing separating the astronaut from the vacuum of space and certain death, the spacesuit enables the astronaut to achieve superhuman feats. With the help of scientific innovation, what had once been fantasy suddenly becomes reality. The novelty of the spacesuit in the relationship between human beings and technology is significant. An amalgamation of man with machine, the image of the astronaut in his suit captures something subliminal in the psyche of modern man, as it redefines the limitations of the human body, pushing the boundaries of possibility. With their visors down, the astronauts are mysterious and essentially anonymous, enabling the viewer to project his or her own fantasies of heroism on the subject (Launius 203). The astronauts were at once exceptional and accessible, both heroes and “everyman.”

The symbolic power of the hero astronaut in his spacesuit is certainly compelling. However, a common theme of the hero’s journey is that they bring back a boon for the benefit of mankind. As it often goes with myth, this benefit isn’t easy to identify when it comes to the Apollo missions. It certainly wasn’t the collection of moon rocks brought back by the astronauts. Perhaps the most significant boon from Apollo is the perspective of planet Earth granted to the astronauts—and by extension, the public at large—by viewing it from space. Many of the astronauts have described this as a transcendent experience. Albert Harrison quotes David Wulff, who writes that a transcendent experience

involve[s] an expansion of awareness, recognition of something bigger than oneself, and a sense of identification with a source of being such as God, or, in the case of people who are not religious, a sacred union with all of life, nature, or the universe. Transcendent experiences diverge, “in fundamental ways from ordinary experiences and leave a strong impression of having encountered a reality different from – and in some crucial sense, higher than – the reality that we encounter every day.” (Qtd. in Harrison 38-39)

This transcendent experience shared by many of the astronauts even has a name: it's been dubbed “the overview effect.” Frank White's 1987 book of the same name draws on the experiences of the astronauts in orbit and proposes a system of philosophy based on the phenomena. In an examination of this philosophy, Thore Bjornvig notes, “Central to it is a globalized, pacific vision of Earth as a borderless, interdependent system, dreams of a unified humanity, and a heightened ecological awareness” (5). Thanks to the availability of images and video of the Earth from space, this phenomenon is not limited to the astronauts. Ordinary people who have never left Earth can share in this transcendent experience and have their worldview changed by it. White's book theorizes that such transformations will lead to the future evolution of humanity as we escape our earthly shackles (and the associated squabbles of nation-states) and go on to colonize the solar system and eventually, the universe. Apollo, rising out of one such squabble, then becomes just the first step on a path that will lead to a peaceful, globalized society (Bjornvig 5-8).

Today, this optimistic outlook on the impact of manned space travel has yet to coalesce. White's model of earth as a global village unified by the obligation to spread throughout the solar system has been superseded by the old nation-based paradigm of manned space travel, and even a growing commercial element (Burwell 46). It seems that we cannot escape the reality that innovation isn't born from a vacuum; that competition—whether political or economic—is required. Despite the transcendent experiences and scientific progress offered by manned spaceflight, we cannot escape human nature. In a review of *Moon dust: In Search of the Men who Fell to Earth* by Andrew Smith, Launius notes:

He wrote that “Apollo seems to me to be the most perfect imaginable expression, embodiment, symbol, of the twentieth

century's central contradiction: namely, that the more we put our faith in reason and its declared representatives, that the more irrational our world became." As only one example among many, he noted that our science and technology has made our lives more abundant than ever but our dissatisfaction has never been greater. (244-245)

There is no questioning that Apollo is an extraordinary chapter in the course of human history, but the fifty years that have transpired since humanity first set foot on another world have been marked by the caveat that advancements in the fields of science and technology have done little to solve global problems.

As an example of what human beings can do with the right resources and the brightest minds, Apollo should leave us feeling let down by the ensuing years. Jaques Bouveresse states in a critique of Wittgenstein, "When the question asked is no longer that of progress, but rather that of determining what to do with it, faith suffices and proof can wait. And it is a faith that unconditional advocates of progress—or perhaps, to be exact, of growth—seem to be able to count on now more than ever" (303). Despite the space program's historic scientific achievement and its illumination of US values—including freedom, peace, knowledge, understanding, equality, and progress (or growth)—its primary function in today's society is as a monument for the "civil religion" of US self-worship and the illusion of scientific progress.

The story and symbols of the Apollo program make for an excellent modern myth that has defined the development of the American cultural identity, value system, and "civil religion" of the late twentieth century and beyond. The direct objective of Apollo—defeating communism in the "space race"—has been accomplished but is no longer relevant outside of the patriotic self-worship endemic to the American "civil religion." Its secondary attributes, including the mythology of the astronaut and the "overview effect," have the potential to transform society but instead have dissipated, and with them the hopes for a utopian future for humanity in outer space. Though they may well be the most significant events of the twentieth century (or even in human history), the Apollo missions illuminate much about our society but have done little to change it.

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European Rail Nationalization and Income Inequality: An Empirical Analysis

By William Burrus

What is the government's responsibility? How much should government control? This common debate occurs within the transportation industry regarding the extent of private or national ownership. Are there advantages to greater degrees of nationalization, where a company or industry is owned and/or operated by the government? Recent studies have linked privatization, a business or industry being owned and operated by private, non-government entities, to changes in the economy and greater income inequality. The disorganization of industrial relations and changes in market regulation are hidden from the public eye, thereby receiving less criticism and contributing to the increase in income inequality (Greer and Doellgast, 2017).

Cuadrado-Ballesteros and Pena-Miguel (2018) find privatization reforms in Europe may be implemented with delayed increases in productivity and decreases in unemployment, but they contribute to income distribution deterioration. In a study specifically related to the British rail system, Wellings (2014) examines the inefficiency of the rail system there that has followed a fragmented privatization reform in the 1990s. In particular, critics such as Wellings note the loss of economies of scale, higher prices, and safety concerns. One possible solution Wellings proposes is to further privatize the industry by removing the remaining government regulations to facilitate the development of a privately-owned vertical integration of the industry. Vertical integration means one company owns its entire supply chain, including its manufacturers, suppliers, and distributors. Theoretically, transaction costs would decrease, resulting in cheaper fares for passengers. Similar calls for vertical integration have come from people advocating for a return to a nationally owned and operated rail company. The rail industry is an interesting case to explore because it has high costs and barriers to entry relative to most sectors. It also has important policy implications given the relevance of public transportation.

In this paper, the effect of rail nationalization on income inequality will be tested empirically by using data from the World Bank. Ordinary Least Square (OLS)

method will be adopted to facilitate the test in this econometric study. One would expect nationalization to have a negative effect on income inequality, as nationally owned industries tend to redistribute money more evenly than privately owned industries (Chang, Hevia, & Loayza, 2018).

Data

Much of the data used in this paper comes from the World Development Indicators (WDI) provided by the World Bank. Included is the Gini index from 2015. GINI is frequently used as a proxy variable for income distribution; a score of zero represents a country with perfect equality, while a score of 100 represents a country with perfect inequality. Nationalization is measured as the percentage of state rail infrastructure originating from public funds according to the European Commission's fifth Rail Market Monitoring report, published in 2016. Figure 1 below presents the variables of interest, Gini index and degree of nationalization, across the twenty-seven European countries.

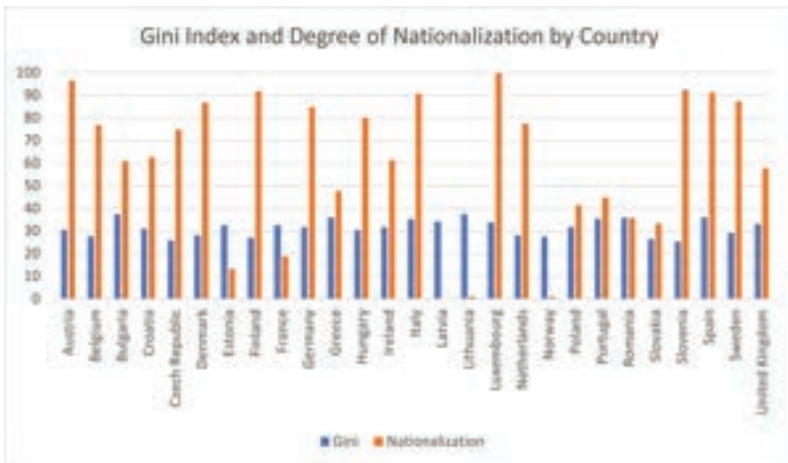


Figure 1. Gini Index and Degree of Nationalization by Country

Source: World Bank (2015); European Commission's fifth Rail Market Monitoring report (2016)

To control for economic factors outside of the analysis, additional variables are included. GINI represents the Gini coefficient for a country in 2015. Nationalization represents the percentage of state rail infrastructure funding originating from public

sources in 2016. Fuelprice is the cost of a liter of diesel fuel in 2014, converted from the country's local currency into United States dollars. I include fuel price because fuel price is a key determinant in operating expenses of rail companies (Gallagher, Tougas, & Stuhldreier, 2019). CO2 emissions per capita in metric tons is included to control for a possible relationship between a country's average income and its CO2 emissions, such as the often-discussed Kuznets Environmental Curve, where emissions increase as income rises to a certain level, then decrease (Grubb, Butler, & Feldman, 2006). If fuel prices were not accounted for, they would have a large effect on nationalization, skewing the results. GDP per capita is measured in current US dollars, figures from WDI 2015. Trade represents trade as a percentage of GDP and was selected to account for differences in levels of trade between countries, which would affect the amount of rail infrastructure needed in a country to help ship goods in, out, and within its area. The trade variable serves as a proxy variable for globalization and international trade, which is shown to be positively related to income inequality, especially among firm owners in developing countries (Foellmi and Oeschlin, 2010). Enrollment is a measure of enrollment in higher education, defined by the World Bank as "the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown." Gender Parity Index (GPI) is the ratio of women to men enrolled at tertiary level in public and private schools, meaning that a score greater than one suggests women are more advantaged than men in educational opportunities, while a score of less than one suggests men are more advantaged than women in educational opportunities. Both enrollment and GPI are included to account for varying degrees of inequality in the countries' education systems, as well as further inequality that develops as a result. GPI is particularly useful to control for national gender income inequality, which is the single most important factor for projecting long-run income inequality in Sweden, for example (Hederos, et al, 2017). Food, manufacture, ores, and tourism represent the percentage of food, manufactured goods, and ores as a percentage of merchandise exports in 2015, with international tourism as a percentage of total exports from 2015. The data regarding food, manufacture, ores, and tourism exports all come from the WDI. These variables are included in the analysis in order to control for economies that are dependent on different industries to account for differences in export prices across countries, which have been shown to be linked to income inequality (Flach and Janeba, 2017). In the case of the tourism industry, Alam and Paramanti, (2016) using a panel dataset of developing countries, have found that income inequality would follow an inverted U shape (a

Kuznets curve) as it rises and then falls with the income of tourism revenue. This suggests that the tourism industry may exacerbate income inequality up to a certain point when it is in its early stages of development, then decrease income inequality once development passes this point.

Table 1. Summary Statistics

	Median	Mean	St. Dev	Minimum	Maximum
Gini	31.80	31.61	3.69	25.40	37.40
Nationalization (in %)	62.60	59.65	32.03	0	99.80
Fuelprice (in \$)	1.63	1.67	0.18	1.39	2.11
CO2 (emissions per capita, in metric tons)	6.18	6.96	3.26	3.50	17.36
Trade (% of nominal GDP)	102.43	123.39	73.32	56.24	416.39
GDP per capita (current \$)	25817	32673	22456.1	6994	100428
Enrollment (% total enrollment)	69.74	69.32	17.88	19.78	122.40
GPI	1.31	1.31	0.17	0.98	1.56
Food (% of merchandise exports)	10.21	10.90	4.98	2.44	20.80
Manufacture (% of merchandise exports)	75.52	71.75	15.57	21.50	89.20
Ores (% of merchandise exports)	2.62	3.41	2.71	0.59	14.06
Tourism (% of merchandise exports)	5.03	8.52	7.97	2.78	36.98

Source: World Bank (2015); European Commission's fifth Rail Market Monitoring report (2016)

Model

Figure 2 presents a data plot for the income inequality and nationalization, which supports the hypothesis.

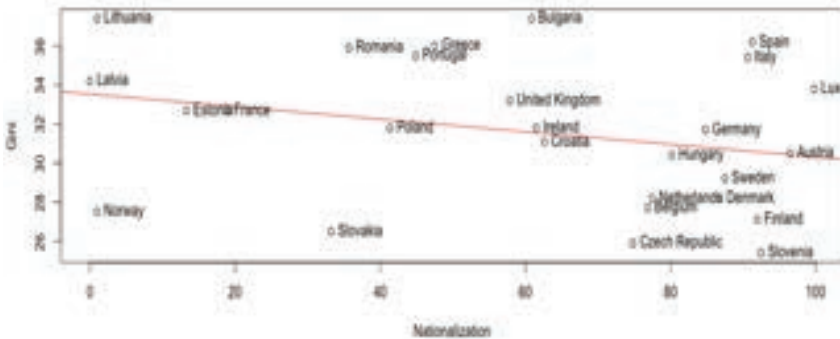


Figure 2. Simple Regression Plot with the line of best fit. The equation given is $Gini = 33.537 - 0.032 (NATIONALIZATION)$. $R^2 = 0.042$, $p\text{-value} = 0.156$, standard error = 0.22.

Source: World Bank (2015); European Commission's fifth Rail Market Monitoring report (2016)

In order to test whether level of nationalization of the rail industry influences income inequality in European countries while accounting for the effects of other economic variables, the following equation is established:

$$\begin{aligned} GINI = & \beta_0 + \beta_1(NATIONALIZATION) + \beta_2(FUELPRICE) \\ & + \beta_3(CO_2) + \beta_4(TRADE) + \beta_5\log(GDP \text{ per capita}) + \\ & \beta_6\log(ENROLLMENT) + \beta_7\log(GPI) + \beta_8(FOOD) + \\ & \beta_9(MANUFACTURE) + \beta_{10}(ORES) + \beta_{11}(TOURISM) + u \end{aligned}$$

CO_2 emissions per capita and income inequality are indicated to have the inverted U shape similar to the Environmental Kuznets Curve, shown in the study by Zhu et al. (2018). Because the relationship is not linear and has a narrow range of values, CO_2 is not modified in this equation. A wide range of literature has been written about the relationship between schooling and income inequality, including Cavusoglu and Dincer's paper (2019) which suggests that the relationship is an inverted U shape as well. A logarithm is used to modify the GDP per capita variable because of the extreme range of GDP per capita from country to country within the

sample (see Table 1). The level-log form provides the simplest, most meaningful way to interpret the relation between GDP per capita and income inequality. A level-log relation is applied to GPI because it is the most straightforward way of analyzing the relation between GPI and income inequality; measuring the effects of inequality by going from a GPI of zero to one to two would not provide any meaningful results.

A higher degree of nationalization should disperse more wealth and income among operators in the rail transportation market, as a government is helping to subsidize the costs of operation rather than actively attempting to make a profit. With this in mind, one would anticipate a higher level of nationalization to be associated with a lower level of income inequality, represented as a negative sign for the nationalization variable in the regression results.

Results

Table 2. Regression Results

	(a)	(b)	(c)	(d)
INTERCEPT	33.54***	60.82***	34.15	20.01
	(1.49)	(11.62)	(19.65)	(20.52)
NATIONALIZATION	-0.032	-0.042	-0.036	-0.024
	(0.022)	(0.023)	(0.027)	(0.026)
FUELPRICE		-4.03	0.427	5.06
		(5.11)	(4.95)	(4.96)
CO2		-0.125	0.107	0.440
		(0.286)	(0.272)	(0.302)
Log (GDP per capita)		-1.05	-0.421	-0.611
		(1.46)	(1.37)	(1.30)
TRADE		-0.009	-0.018	-0.027*
		(0.014)	(0.013)	(0.012)
ENROLLMENT		-0.049	-0.094	-0.101*
		(0.044)	(0.044)	(0.043)
Log (GPI)		-15.19*	-9.92	-11.0*
		(5.61)	(5.13)	(4.76)
FOOD			0.519*	0.521*
			(0.177)	(0.201)
MANUFACTURE			0.089	0.160
			(0.086)	(0.126)
ORES			0.438	0.682*
			(0.304)	(0.310)
TOURISM			0.031	0.106
			(0.086)	(0.088)
R ²	0.079	0.432	0.683	0.748
Number of observations	27	27	27	24

Source: World Bank (2015); European Commission's fifth Rail Market Monitoring report (2016)

Notes: *, **, ***, and *** represent significance at the 5 percent, 1 percent, and .01 percent level, respectively. Standard errors are in parentheses

As shown in Table 2, the initial regression (a) is a single variable regression consisting only of Gini and nationalization. In equation (b), GINI is regressed on nationalization, fuelprice, CO2, trade, enrollment, and GPI. The statistics used in the regression are listed in Table 1. In regression (c), Gini is regressed on nationalization, fuelprice, CO2, trade, enrollment, Log(GPI), food, manufacture, ores, and tourism. Regression (d) is the same as (c), but with Latvia, Lithuania, and Norway dropped because their nationalization values are outliers, as visualized in Figure 1.

On its own, nationalization does not have much of an impact on income inequality; according to the coefficient in the simple regression (a), if a country's rail industry saw a 10 percent point increase in funding coming from public sources, one would only expect a 0.32 point decrease of that country's Gini index assuming all else to be equal. All four regressions support the hypothesis that higher degrees of nationalization are linked to lower income inequality, as the coefficient for nationalization is negative in (a), (b), (c), and (d), meaning that as nationalization increases, the Gini index (income inequality) decreases. Despite being a useful economic observation, nationalization is not statistically significant in any of the four regressions, as a 10 percent point increase in nationalization corresponds to a 0.042, 0.036, and 0.024 point decrease in a Gini index in regressions (b), (c), and (d), respectively.

When various industries as a share of exports are added and outliers are controlled for in regression (d), countries who export more food proportional to total exports are expected to have higher inequality. According to this regression, for every percentage point increase in food, one would expect the Gini index increase by 0.521 points. This result is significant at the 5 percent level, and its coefficient is nearly identical to the one in regression (c) before the three outliers are dropped. Globalization and fuel price both have negative coefficients, neither of which are statistically significant.

One potential policy implication unrelated to the rail industry would be that of the statistically significant GPI coefficient. According to regression (d), a one percent point increase in the GPI of a country from this sample would be expected to decrease the country's Gini index by 0.11 points. Level of schooling is also found to be significant, as a one percent increase in the proportion of student-aged people enrolled in tertiary education is associated with a 0.101-point reduction in that country's Gini index.

Discussion and Conclusion

This paper investigates the relation between a country's income inequality as indicated by its Gini coefficient and its degree of rail industry nationalization as measured by percentage of state rail infrastructure originating from public sources. The most robust regression, which holds sector-related exports constant and drops outliers does not indicate that there is any significant relation between rail nationalization and income inequality for a given country, although the coefficient for nationalization is negative, supporting the hypothesis that higher levels of nationalization in the rail industry are associated with lower levels of inequality. In this regard, there are no statistically significant takeaways from this paper, although the results of other variables are intriguing from an economic and political perspective. A study using time-series data before and after major changes to laws regarding government involvement in transportation would perhaps be more revealing of the true effect between of the transportation industry on national income inequality, should one exist. To go further, although it would be difficult to implement in practice, one could also measure nationalization across multiple industries to find if general, non-sector specific nationalization is linked to income inequality levels.

An intriguing result was the significant, positive relation between food as a percentage of merchandise exports and income inequality. Upon further inspection, this does seem to have a reasonable explanation; with free trade being a key principle of the European Union, it stands to reason that countries whose economies are more reliant on food exports have seen their agricultural sectors more affected by the European Union's liberal free trade policy. Such policies may intensify inequality through the corporatization of the agricultural industry, which tends to funnel a large portion of profits to a small number of people. A similar statistically significant result is found for ore exports, which may exist for similar reasons. Regarding unequal education opportunities, the results suggest that, while ensuring men and women have equal opportunities to attend and succeed at a high level of education almost certainly does promote equality, it is highly unlikely that a country would be able to eliminate inequality just by incentivizing a high female to male ratio of students at the university level. The results also indicate that one effective way for European countries to reduce inequality is to encourage their populations to pursue post-secondary school.

This study finds that European rail nationalization is negatively associated with income inequality, though the effect is extremely small and not statistically

significant in this sample. Nevertheless, the negative effect confirms the finding of Greer and Doellgast (2017) and Cuadrado-Ballesteros and Pena-Miguel (2018), using recent, empirical data and a different econometric approach. Despite the small, statistically insignificant relationship between nationalization and income inequality, the paper does highlight the significance of other factors, such as equal access to education, in reducing income inequality. Perhaps more robust and responsible government involvement in these areas would result in a marked decrease in national income inequality.

This paper's limiting factor is in its relatively limited scope; the railroad industry is only one part of a nation's economy, and although some trends related to the effects of nationalization may be found in its analysis, a more comprehensive study is needed to draw more definitive relations between nationalization and income inequality. For future studies, perhaps one could find a way to approximate the level of nationalization for entire economies rather than a certain sector, then finding if a causal link to inequality exists. One could also use data from countries outside of the European Union; we limited the study to twenty-seven European countries primarily because of the accessibility to uniform data provided by the European Commission. It may be worth investigating if a more global study produces similar results.

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Finding Eleanor of Aquitaine

By Annie Spencer

Eleanor of Aquitaine, duchess of Aquitaine by right as well as queen of France (r. 1137-1152) and queen of England (r. 1154-1189). She was the mother of two kings, and has been the subject of romance, historical adulation, and historical vilification. This fictionalized vilification could even be referred to as the “Black Legend” of Eleanor (see McCracken 247-264). The Black Legend largely stems from events such as Eleanor’s rumored affairs, and her support of her sons in their rebellion against their father. She disrupted family dynamics, marriage oaths, and fealty to the king with this one action. Eleanor encouraged her sons Geoffrey and Richard to follow their brother Henry III to France in order to overthrow her husband, Henry II. Her violation therefore expands beyond simply the familial and is instead treason to her country. She would have known that her actions would have consequences, especially the social implications and ramifications of her son’s rebellion. Eleanor consistently attempted to push Henry II around, and this final rebellion solidified her negative image in the minds of nationalistic chroniclers and modern-day historians (Evans 250).

Furthermore, her active intervention in what is considered to be the realm of men and kings has subjected her to centuries of divided opinion. She was an active political figure during the reigns of her sons and was considered a regent while Richard was off crusading. The essay that follows will detail these actions and their repercussions in terms of chronicle depictions and modern historian use. I will draw on recent scholarship that contests negative views of Eleanor, including the work of Jean Flori, Bonnie Wheeler and John C. Parsons, and D.D.R. Owen.

I am not the first scholar to attempt to create a more complex and composite picture of Eleanor, though I hope to demonstrate that the presentation of Eleanor in medieval chronicles depended significantly on access to Eleanor. Court historians, such as Robert de Monte, often painted a much more sympathetic portrait than those chroniclers away from her court. In addition, the *History of William Marshal* depicts one of the most compassionate views of Eleanor. William Marshal was an influential aristocrat in the Anglo-Norman world who was highly regarded by most. Through this attempt at reconciling her image in this way, I will be able to provide a

more contextualized picture, as well as determine why these depictions have been so divided. I believe that Eleanor's characterization has been polarized by both the chroniclers and historians. In reality, she was just a queen, but given her regular interventions, her actions would have inspired either admiration or hatred due to the institutionalized misogyny and turbulent political terrain of the late twelfth century.

I will utilize several medieval written records that detail important court history, called chronicles, from the twelfth and early thirteenth centuries in order to gain a contemporary, albeit biased, view of Eleanor (Flori 4). The chronicles include those of Roger of Hoveden, Robert de Monte (also referred to as Robert of Torigni), Richard Devizes, and Roger of Wendover. Additionally, I will use *The History of William Marshal*. It should be noted that the *History* was commissioned for a private audience rather than as a traditional chronicle, which is why I have decided to separate it from the chronicles. Through these texts, I hope to provide a perspective of how Eleanor's male contemporaries viewed her, as well as to ascertain the way in which modern-day historians utilize those views for their own scholarship.

This essay aims to build on previous work to create a more holistic picture of Eleanor: combining her depiction in her court, in the chronicles, and in a particular family's popular consciousness. While several books have been dedicated to the study of Eleanor and include chapters that detail each section of her involvement, such as the biographies and collections I have previously mentioned, my essay aims to create a connection between all of these expansive works. Very few historians have approached her as a "primary topic" (Mitchell 2). Like our medieval predecessors, scholars have either romanticized or demonized Eleanor in keeping with their own personal beliefs. Both sides are fighting with "excessive fervour" (Flori 11), when instead we should be attempting to create a joining of different perspectives that create a complex woman, as I plan to do here.

Eleanor of Aquitaine and Chroniclers

The relationship between Eleanor and medieval chroniclers appears to have been a complicated one. There were some who viewed her positively, such as Robert de Monte and Roger of Hoveden. Others, however, seem to have been formative in the creation of Eleanor's "Black Legend," such as Richard of Devizes, Roger of Wendover, and Matthew Paris. I omit Matthew Paris because he wrote later than the time that I address, and his main sources were Ralph Diceto and Roger of Hoveden (Mitchell 13).

The main issues that I will look at in how the chroniclers characterized Eleanor are the major events of her life. I will begin with Eleanor's trip with Louis VII during the Third Crusade and continue through Eleanor's marriage to Henry after her quick divorce from Louis VII. Additionally, I will investigate the Revolt of the Young King, when Henry III and his brothers staged an uprising against their father. Eleanor's support of this rebellion led directly to her captivity that lasted until Henry II's death. Afterwards, I look at her release from captivity and her political activities while her sons Richard and John were king.

Chronicles were, of course, written by male ecclesiastical figures who were heavily influenced by, and in turn, reinforced the poisonous patriarchal order of medieval England. These men were "at best unfavourable to women in general; often they were hostile" (Flori 4). They consistently privileged the male voice over the female voice, and, for most chronicles, Eleanor's was much too loud for their liking, especially from a distance. The portrayals of Eleanor by Richard of Devizes and Roger of Wendover led to the formation of the "Black Legend." Both men were writing at the end of Eleanor's life, and thus were referring to previous chronicles for their references to her. They did not like what they read and heard, and thus appropriated negative images to serve their own misogynistic agendas.

On the opposite side, the positive presentation of Eleanor comes from chroniclers who were around her and attended her court. De Monte was very close at the Angevin court, and therefore had access to Eleanor, or at least people who had access to her. He would have been familiar with her and what her personality was like. Likewise, Roger of Hoveden was present at Richard's court, and would have known the mother queen. It is likely that their interpretations of Eleanor, while flattering, could also have been subject to the agenda of pleasing the royal family and currying benefit by portraying their matriarch favorably.

Robert de Monte's Chronicles

Robert de Monte's chronicles demonstrate an Eleanor who behaved "appropriately" for a queen. Eleanor gave land to her husband (de Monte 66), provided him with several heirs—both sons and daughters (de Monte 73, 76, 82, 84, 94, 101)—and presided over courts (de Monte 87, 91, 117). Indeed, Robert de Monte was a frequent guest at the Christmas courts of Eleanor and Henry and an intimate of the household. At one point, Monte defines Eleanor as "Alienor, the countess of Poitiers, the wife of Henry, duke of Normandy" (de Monte 73). Here, Eleanor's personal title takes precedence over her marital title. Though this designation would

not always be the case with Monte's mentions of Eleanor, this one demonstrates importance placed on her that extends beyond her marital relations and gives her individual authority and power.

Monte goes on to detail the Revolt of the Young King in 1173 and Eleanor's support of that revolt: "In like manner, the king was deserted by his queen Alienor," and her subsequent imprisonment (de Monte 118). However, Monte only chronicles to the year 1186; therefore, he does not account for Eleanor's political engagements while she was regent for Richard.

Roger of Hoveden's Chronicles

Roger of Hoveden is the most comprehensive chronicler of Eleanor (Mitchell 11). He portrays her as a very prominent and active participant in politics, especially at Richard's side and on his behalf. Roger was likely a clerk or a secretary to Henry II, as well as Richard's court historian (Hoveden and Riley, 1: v), which explains why Eleanor is present through the two stages of her life presented here: queen as wife and then queen as mother.

Though Hoveden does not directly address Eleanor's involvement with the revolt in 1173, and in fact goes to great lengths to describe the ways in which Richard was the sole perpetrator of the revolt, he does mention her imprisonment that follows: "Immediately on this, [King Henry II] embarked . . . bringing with him his wife, queen Eleanor . . . whom he immediately placed in confinement" (Hoveden and Riley, 1: 381). The "immediate" nature of Eleanor's captivity implies that Henry knew of Eleanor's involvement with the revolt and the active role that she played, since he was so eager to put her up after the conflict had been resolved.

Eleanor is mentioned as an active mediator in treaties during Henry II's reign, even throughout her captivity. Hoveden notes that in 1184, "the king confirmed the treaty and final reconciliation by writing, and ratified the same, after its confirmation, by oath on part of his sons Richard, Geoffrey, and John, in presence of queen Eleanor their mother" (Hoveden and Riley, 2: 34). Hoveden indicates Eleanor's persistent authority as a queen, mother, and wife through this intersection of all three identities. In addition, Hoveden notes the importance of having her there at the treaty and her role in the confirmation and ratification as a witness.

After that point, Eleanor is painted as queen mother and queen regent, as in 1189. After the death of Henry II and the rise of Richard, Eleanor was released from her "house arrest" and immediately resumed her role as queen:

In the meantime, queen Eleanor, the mother of the before-named duke, moved her royal court from city to city, and from castle to castle, just as she thought proper; and sending messengers throughout all the counties of England, ordered that all captives should be liberated from prison and confinement, for the good of the soul of Henry, her lord; inasmuch as, in her own person, she had learnt by experience that confinement is distasteful to mankind, and that it is a most delightful refreshment to the spirits to be liberated therefrom. She, moreover, gave directions, in obedience to the orders of her son, the duke, that all who had been taken in custody for forestall offences should be acquitted thereof and released. (Hoveden and Riley, 2: 112)

While the mention of her own experience does impart a certain sense of irony, the main focus of this is of Eleanor's actions and how it was "in obedience to the orders of her son." This seemingly insignificant mention of Richard indicates that Eleanor is acting on behalf of the king, as an active political participant. She is framed here as an enactor of justice, a trait typically reserved for the king or other male figures of importance. By framing her this way, Roger of Hoveden allows Eleanor to occupy roles that fit her actions without the strict confines of what is considered "female" or "male" power.

While the episode described above is regarded as true, Hoveden does make a considerable effort to make Eleanor look like a gentle peacemaker and mediator. In three instances, Eleanor is specifically mentioned as being present or an active mediator in peace treaties and "reconciliations" (Hoveden and Riley, 2: 130, 271, 325). Hoveden positions Eleanor in the female sphere of influence, as a queen who acts in a familial way and does not create conflict, but rather solves it (Huneycutt 115-32).

Along those same lines, after Richard was captured while on crusade, Eleanor's importance and her role in freeing him is diminished by Hoveden to that of an advice-giver and mother rather than the active political savant who utilized her influence on both political and religious figures in order to free her son (Mitchell). Hoveden describes her as having been the one who advised Richard to abdicate (Hoveden and Riley, 2: 286). What is interesting is that the translator, Henry T. Riley, emphasizes Eleanor's status as Richard's mother rather than on her status

as queen: “Richard, king of England, with queen Eleanor, his mother” (Hoveden and Riley, 2: 309-310). By separating “his mother” from her title as queen, he places more importance on her familial role. It is likely that Riley’s own historical, patriarchal bias would have swayed him to further characterize Eleanor’s actions as “familial” (Mitchell 11). The title of mother seems to be emphasized here, while the active political title of “queen” seems to be a formality.

Once Richard is released, Eleanor loses the title, as Hoveden writes: “Accordingly, the archbishops of Mentz and Cologne delivered him, free and released by the emperor, into the hands of his mother Eleanor” (Hoveden and Riley, 2: 310). Hoveden attempted to remove her political agency and her public persona by further emphasizing her role as mother. As Mitchell notes: “[the chroniclers] are silent about Eleanor’s actions as regent or virtual regent in both her husband’s and sons’ reigns, unless that activity could be framed as familial” (11). By erasing her title as queen, Hoveden relegates Eleanor to the familial role of mother and disregards her “public” role in Richard’s kidnapping.

When Eleanor is mentioned as being present and active in the political sphere, Hoveden frames her activities as negative and a cautionary tale. He writes:

In the same year, queen Eleanor, the mother of Richard, king of England, came to Rouen, and sent for Hugh Fitz-Ernest de Neville, and the other keepers who had charge of Philip, bishop of Beauvais, in the fortress of Rouen, and begged them, for the love they bore her, to allow said bishop to come to her lodging to speak to her . . . being unable to resist the queen’s entreaty, they allowed the said bishop, in fetters, to go beyond the gates of the fortress . . . dragging him away from the door of the church, led him to the fortress whence he had come, and kept him in still stricter custody, imputing it to the queen that this had been done by her advice. (Hoveden and Riley, 2: 416)

The way Hoveden recounts the story implies that Eleanor is the cause for the negative outcome of the situation and that the consequences rest on her shoulders, since it was under her advice that the “keepers” released Philip and that he had to be re-arrested. Due to a woman’s influence on the politics of men, the only outcome could be negative. In fact, things became worse, “in still stricter custody,” due to Eleanor’s actions, thereby demonstrating that a woman has no place in the male-dominated sphere of influence. In addition, Hoveden presents her as cruel.

Her actions created a crisis, demonstrating her callous personality. This could be a precursor to Eleanor's demonic representation and the formation of the Black Legend.

Richard of Devizes' Chronicles

Richard of Devizes began chronicling in the year 1189 with the coronation of Richard (Devizes and Giles 5), therefore he does not note the important events in Eleanor's life like the Revolt of the Young King and her subsequent imprisonment. However, Richard of Devizes' chronicle is where we begin to see the circulation of rumors and the formation of her "Black Legend." While traveling to Italy in 1190, Devizes writes:

Queen Eleanor, a matchless woman, beautiful and chaste, powerful and modest, meek and eloquent, which is rarely wont to be met with in a woman, who was advanced in years enough to have had two husbands and two sons crowned kings, still indefatigable for every undertaking, whose power was the admiration of her age, having taken with her the daughter of the king of Navarrese . . . followed the king her son . . . Many knew, what I wish that none of us had known: This same queen, in the time of her former husband, went to Jerusalem. Let none speak more thereof; I also know well. Be silent. (Devizes and Giles 24-25)

While Robert Chapman notes that Richard Devizes describes Eleanor in "superlatives" (Chapman 394), it is what follows his description of her that is important to the creation of the Black Legend. While Devizes does not outright say what happened in Jerusalem, it is implied that he refers to her alleged affair with her uncle. Peggy McCracken notes the hidden scandal: "The marginal note both announces the secret and hides the truth . . . The marginal annotation in Devizes' chronicle gives the truth the status of a scandalous secret" (249). Devizes gives credence to the salacious claim and villainizes Eleanor's picture for her contemporaries and even people today.

Devizes follows this same formula of creating a flowery image of Eleanor only to immediately cast a darker shadow. He says that Eleanor is "a lady worthy of repeated mention" (Devizes and Giles 55), though his references to her are few and

when she is mentioned, it is in a negative light. His language to describe her actions frames them in a damaging perspective.

During a trip to Ely, a city that was held under Eleanor's dower, she noted the very poor conditions that the people were living in and inserted herself into a political conflict between the archbishop and the bishop of Rouen. Devizes writes that Eleanor "entreated, nay, she demanded of the archbishop of Rouen . . . and compelled him to revoke the sentence" (Devizes and Giles 55). While he demonstrates that Eleanor's actions were active, the word choice has negative connotations and therefore shows his disapproval. After Eleanor forces the bishop to be returned to his post, she forces the Lord of Ely to "revoke the sentence of excommunication he had pronounced against the exchequer barons" (Devizes and Giles 55). He even notes that the outcome brought about by Eleanor "was peace between the implacable, though their vexation was apparent" (Devizes and Giles 55-56). The vexation felt by the Lord of Ely shows that the men involved in the situation were annoyed by Eleanor and her involvement as a female, inserting herself into the male-dominated public sphere of politics. Even as a queen, her gender weighed more heavily in the minds of men than her supposed status.

Not only does Devizes portray her active political role in a disapproving fashion, he also goes out of his way to diminish her role to a passive status as witness. During the Council of London in 1191, when Eleanor presided over the Council, Devizes writes that "the messengers of the chancellor, now again legate, enter the assembly, saluting the queen who was present" (Devizes and Giles 57). Here, he mentions her presence at the Council, but significantly diminishes her importance by reducing her to a witness. He diminishes her prominence in the public sphere in an attempt to reduce or erase the presence of her more masculine behavior (Mitchell 11).

Indeed, Richard of Devizes does not include Eleanor's time as regent, or virtual regent, and therefore nearly erases all of her political ability. He describes her as a witness to a few events, as well as Eleanor's role in procuring the marriage of Richard to Berengaria but does not grant Eleanor her own individual power or agency (Devizes and Giles 25).

Roger of Wendover's Chronicles

As previously stated, Roger of Wendover utilized the chronicles of Ralph de Diceto and Roger of Hoveden before taking over during Henry III's reign (Wendover and Giles, I: vi). Therefore, I will attempt not to repeat too much of my account

of Hoveden's chronicles. That said, Wendover's de-scription of the Revolt of the Young Kings involves more blame placed on Eleanor than his predecessor, Roger of Hoveden, who specified that it was the young Henry's fault. Wendover, however, writes:

The same year the young king Henry, walking in the counsels of the wicked, left his father, and withdrew to the court of his father-in-law the king of France; upon which Richard duke of Aquitaine, and Geoffrey count of Brittany, by the advice as was said of his mother queen Eleanor, chose to follow their brother rather than their father. (Wendover and Giles, 2: 23)

It is unclear whether or not the so-called "counsels of the wicked" would have included Eleanor; however, she is later mentioned as being the reason why both Richard and Geoffrey revolted against their father in favor of their brother Henry III. Wendover's explicit distaste for the role Eleanor played in the Revolt demonstrates the part he played in the formation of her "Black Legend" and the corruption of her image in popular consciousness. Wendover places Eleanor in the position of a villainous fictional character, much like the demon queen described by Robert Chapman, rather than a woman, a queen who lived in the real world. His St. Alban's chronicles did much to further the idea of an improper queen who earned a reputation for devious actions.

Like Hoveden, Wendover emphasizes the "immediacy" in which Eleanor was placed in confinement after the Revolt had subsided in 1174, though Wendover frames her release and her order to free the prisoners in a much less-positive light (Wendover and Giles, 2: 28). Speaking of her passively, he writes that Eleanor "received her son's permission to manage matters in the kingdom according to her own pleasure" and notes that she freed those prisoners, though he frames it as Eleanor's doing, not as under the orders of her son, as Hoveden had. Instead, he notes that Eleanor did it "with these powers," making it known that it was Eleanor's personal decision (Wendover and Giles, 2: 77). He does not write about any positive outcome of her actions, thus framing her in a negative light by omission of her positive deeds.

Indeed, Wendover frames all of Eleanor's deeds while regent in a negative light. In 1198, while she was virtual regent while Richard was away, she "forbade" John, cardinal of Anagni, from entering England. Richard was in Scotland, and without

his express permission, Eleanor would not let John of Anagni pass (Wendover and Giles, 2: 85). Her opposition to a cardinal, a man of religious powers, demonstrates a direct defiance of the medieval patriarchal system and her enactment of masculine power. Roger of Wendover made this point to demonstrate that Eleanor goes beyond the traditional roles assigned to a woman, even a queen, and therefore should be portrayed negatively.

Many modern historians have cherry-picked chronicles in investigating Eleanor, mostly to support their own argument or agenda. Michael R. Evans vaguely references the chronicles of Odo of Deuil, John of Salisbury, and William of Newburgh (Evans 246, 250), though Evans does not reference any of the chroniclers who portray her in a positive light, which would have countered to his argument against a “remarkable” Eleanor. Indeed, Evan’s article is a discussion of the feminist movement and how it has corrupted and romanticized Eleanor’s image.

In fact, in all the secondary sources I have utilized for this essay, John of Salisbury appears four more times in the scholarship that I cite, and William of Newburgh appears twice more. John of Salisbury seems to be the most common (5) (Evans 246; Martindale 425; McCracken 248; Brown 7; Tulhurst 322), followed by William of Newburgh (3) (Evans 250; Mitchell 12-13; Tulhurst 323) who is also tied with Roger of Hoveden (Martindale 428; Mitchell 12-13; Tulhurst 323), Richard of Devizes (McCracken 250; Mitchell 12-13; Tulhurst 325), Matthew Paris (3) (Flori 7; Mitchell 12-13; Tulhurst 323). Some chroniclers are only mentioned once or twice, such as Ralph de Diceto (2) (Martindale 427; Mitchell 12-13), Gerald of Wales (2) (Martindale 27; Tulhurst 323), or William of Tyre (McCracken 248; Tulhurst 322). With all of these, it is crucial to note that the more defaming portraits of her are utilized more often by modern-day historians, whether to give them credence or to decry their “macho prejudices” (Flori 274). In fact, there are only two other instances where I found a reference to de Monte – Mitchell’s “Give Me Back My Son!” (Mitchell 12-13) and Fiona Tulhurst’s “What Ever Happened to Eleanor? Reflections of Eleanor of Aquitaine in Wace’s *Roman de Brut* and Lawman’s *Brut*” (Tulhurst 322)—and his is one of the more commendatory images of Eleanor. The reliance on these negative writings of Eleanor speak to the prevalence of the “Black Legend” and the persistence of it throughout time, even as historians attempt to negate it and situate Eleanor in a more human context, away from the demon that is so often portrayed.

Eleanor of Aquitaine and William Marshal

Another unique text—*The History of William Marshal*—presents a highly personal and distinctive view, which can serve as a point of comparison between official portraits and creates a much more romanticized version of the Queen. Like de Monte, William Marshal had a personal relationship with Eleanor and therefore that relationship would color and bias the depiction of Eleanor in this text, since it was commissioned as a family history to recount the lore and stories to William's children (Mullally 238).

Eleanor is not a central figure in the *History*, but her inclusion says a great deal about the ways in which William Marshal remembered her and memorialized her to the members of his family and household (Mullally 238). The first mention of Eleanor comes when the Poitevin barons rebel against Henry, with Henry going to quell the rebellion, accompanied by Eleanor, Earl Patrick, and his nephew, William Marshal (Mullally 239). The earl and Eleanor were ambushed and taken hostage, but soon released (Holden et al. vers 1619-1622). After William discovered his uncle was killed, he declared revenge, but then found himself captured as well (Holden et al. vers 1653-1724).

The first instance in which we see the romanticized Eleanor in Marshal's account is when she manages to free William, and the author details all that she did for him. He writes "for Queen Eleanor arranged things for him as behoved her, given the quality of the young man: horses, arms, money, and fine clothes she readily gave him, whoever might object, for she was a very worthy and courtly lady" (Holden et al. vers 1860-1871, 1875-1882). While this is a glowing commendation of William's character, declaring that her awards to him were based on his quality, it is also a demonstration of the kindness of Eleanor and "an expression of her personal power, independent of her husband" (Mullally 241). The emphasis on her own wealth and ability to provide the ransom shows her in an active role of a queen who goes beyond the typical passivity of what was required.

In fact, the author expounds on the truth and removes Eleanor's participation in the Revolt of the Young King, even though almost all chronicles make a mention of her actions and her support of her sons. In a text that spends a lot of time on the Revolt, Eleanor is, surprisingly, not mentioned (Holden et al. vers 1977-2391). Yet, once Henry II dies, it is William Marshal who goes to deliver the news of the king's death and release her from her imprisonment. Here is one of the foremost important mentions of Eleanor, and the prime example of the romanticization that comes from their personal relationship and the familial connection: "Queen Eleanor, whose name was an amalgam of 'pure' (*d'ali* in Norman French) and 'gold' (*d'or*), he found in Winchester, now a free woman and in a more comfortable situation than she

was wont to be” (Holden et al. vers 9507-9510). Others etymologized her name in different ways, but it is this author’s etymology that demonstrates the way in which people close to her envisioned her (Mullally 243). The glowing representation of her indicates their close relationship .

The familiarity between William Marshal and Eleanor of Aquitaine was often bastardized, and several rumors about an affair were founded by their enemies. Men at court were envious of William and his success, as well as his very close relationship to Henry II. The king seemed to be very dependent on Marshal, and thus William’s enemies created a rumor that he and Eleanor were having an affair: “The fact of the matter is that he [William] is fornicating with the Queen, and that is a great sorrow and does great harm to the land” (Holden et al. vers. 5243-45). Eleanor is weaponized against William in hopes that the king will get rid of Marshal. This allegation is quickly refuted on the next page and the rumor is put to rest in the *Histoire* (Holden et al. vers 5109-5490). However, the ballad, “Eleanor’s Confession,” suggests “the Queen admits on her deathbed to having poisoned Rosamond Clifford and borne a son to her lover William the Marshal” (Flori 6). Once again, we have Eleanor’s image being adversely affected by someone who did not know her and uses someone with personal knowledge of the queen against her in hopes of further villainizing her. The twisting of the relationship between the two attempts to invalidate the way in which she is characterized by those close to Eleanor and her description in the *Histoire*.

Conclusion

Eleanor seems to have polarized the medieval chroniclers and writers in ways that have created complicated knots for historians to untangle, and yet this untangling still seems largely unsuccessful. Jean Flori notes that her behavior was “enough to make her contemporaries see her as an exceptional woman, outside the norm, admired by some, by others decried and considered a bad lot, dangerous, disruptive, even perverse” (Flori 279). And that still seems true as historians, both popular and academic, attempt to “find” Eleanor. Scholars like Michael Evans and Lois Huneycutt criticize her, while Evelyn Mullally and Linda Mitchell find the “remarkable” in her.

Despite the obvious patriarchal and misogynistic systems of the church, of canon law, and the political culture, Eleanor was a woman who could not be placed into a box. She maneuvered her way around the restrictions placed on her by men and utilized female autonomy. She was not obedient and consistently intimidated and challenged the male figures in her life: her father, Louis VII, and Henry II. Her competency was likely seen as threatening to those men in power. She may not have been very likeable, though she is sometimes described as charming and charismatic.

Eleanor's complexity creates a problem for historians both medieval and modern. She cannot be labeled as a queen who embodied the traditional Anglo-Norman expectations or a modern feminist icon who rejected all those expectations. She escapes confinement to any restrictions or labels placed on her.

Historians have trouble writing biographies because of the difficulty of fleshing out a subject. And more than that, until very recently, historians found doing so especially difficult when dealing with female historical figures. Eleanor's status as one of the most famous queens in British history has inspired several works, but very few have actually been able to realize Eleanor in her full complexity.

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Civil Rights Photography and Consensus Memory

By Yujay Masah

Dr. Martin Luther King Jr. and his image are central to the way many people understand the Civil Rights Movement of the 1950s and 1960s. The images of King speaking passionately about his dream and marching peacefully have been seared into the public consciousness, and he is remembered as a non-militant, thoughtful, non-radical, reverent man who led the Civil Rights Movement to important victories. The dominant narrative about King has permanently tied his image to his dream, or rather, a simplified version of his dream. This version focuses on King's hope that one day little black children and little white children will join hands and ignores his calls to end police brutality, expand voting rights, and to improve housing opportunities for African Americans. American culture simplifies his message into an easy narrative that isn't too radical or too threatening to the status quo, and the popular photographs of King, as well as the ways in which they are interpreted, contribute to that simplification. We see those photos through the context of that simplified, easy-to-digest narrative and interpret King through a narrow and specific lens. This narrative clouds our understanding of King and prevents deeper engagement with the history that surrounds him and his dream. Like King, the popular photography of the movement that he represented flattens complexities and tells a simplified, easily digested narrative. To further explore these ideas, I will discuss the concept of consensus memory and how photography contributes to the development of a consensus memory through the examination of popular photographs of the Children's Crusade, the March on Washington, and the Black Panthers.

A Brief Overview of the Civil Rights Movement and Consensus Memory

The Civil Rights Movement is the modern phase of a longer struggle for freedoms for African Americans in the United States. It began with the 1954 Supreme Court decision on *Brown v. Board of Education*, which found that the racial segregation of schools was unconstitutional. Over the next few years, existing civil rights groups such as the National Association for the Advancement of Colored People (NAACP) and newly organized groups including the Southern Christian

Leadership Council (SCLC) and the Student Nonviolent Coordinating Committee (SNCC) mobilized with a commitment to non-violent direct action to address issues of segregation, voting rights, educational opportunities, employment opportunities, improved housing, and political representation. These demonstrations were well planned and carefully executed by activists trained to withstand verbal and physical attacks from belligerent whites and law enforcement. Over time, divisions formed within and between civil rights organizations over tactics and politics. The Black Power movement came from such divisions, and its politics fell further left than previous organizations and moved away from the non-reactive, non-violence of the past to self-defense (Janken).

This is a very brief overview of the Civil Rights Movement, but, in general, American society interprets this time period in a specific way in the contexts of commemoration, primary education, and amateur history. This interpretation often simplifies the complexities of events, major players, and their impacts on the world at large. Because the history of the Civil Rights Movement is commonly shared and widely and collectively commemorated, Americans remember the movement in a certain way (Hamilton 300). In this paper I will use the term consensus memory to describe the commonly shared and collectively commemorated narrative of the Civil Rights Movement. Consensus memory is defined by Leigh Raiford and Renee C. Romano as “a dominant narrative of the movement’s goals, practices, victories, and its most lasting legacies.” (xiv) Consensus memory is maintained, constructed, and understood through personal memories, popular media, and public history projects.

This concept is distinct from “formal history” because of how people will engage with it in their daily lives. When K-12 students are taught about the Civil Rights Movement, they are introduced to certain figures and some major events but miss a lot of context and complexities (King L. 15). Outside of a school environment, accessible forms of this history are available through documentaries and museum exhibits, but people will also engage with the history of the Civil Rights Movement through political rhetoric and films. There is nothing wrong with not engaging with primary source materials and historical academic works, in fact often they are inaccessible for the average person, but without them, there is the danger of never looking beyond the iconic figures and the events they took part in. In the context of the Civil Rights Movement, the stories of everyday people, the complexities of well-known figures, the planning and effects of campaigns and events, and the impact of overlooked figures can be effectively erased from the overall narrative. It is important to know how these narratives are constructed and why, in order to recognize them.

It is not necessarily bad to engage with these narratives, but understanding why someone or an event is commemorated by our culture can reveal important people, ideas, and stories that have been suppressed, as well as reveal truths about us and our culture.

American consensus memory remembers the Civil Rights Movement as a nonviolent campaign that mobilized African Americans and sympathetic white people to fight against legal and social, but not economic, barriers to inequality with the guidance of respectable leaders who were powerful speakers. The politics of the movement were progressive, but not radical. They fought for the end of segregation and for voting rights, but not for anything that whiffed of communism. This movement begins with *Brown v. Board of Education* and ends with the assassination of King in 1968 and the rise of the Black Power movement (Romano xiv). There are many parts of the movement that are missing from this narrative including the people that activists were fighting so hard against. These narratives often diminish the role of white segregationists and especially the role of white moderates in the oppression of African Americans, which does a disservice to the activists by not highlighting the exact issues they were fighting against. Also missing is the explicit connection of the Civil Rights Movement to the Black Power movement. This new faction of the movement is remembered as more radical, more militant, more dangerous, and less legitimate than its non-violent predecessor, when in fact, the many members of civil rights organizations began to adopt politics that fell further left (Sanchez).

Framing the Civil Rights Movement

Important to the development of a consensus memory is photography. The iconic, powerful images of the Civil Rights Movement, especially when used in remembrance and commemoration, become the visual language through which history is interpreted. By the 1950s and 60s, a photojournalistic style of photography was popular. The goal of this kind of photography is to capture “decisive, individual, isolable, often transitory moments,” and the roots of photojournalism lie in the work of photographers “whose shots unite a plot, a situation, and a mood in a single frame” (Kunhardt 11). When this style is applied to historic figures and events, the decisiveness that it aims for becomes an issue. Because history is rarely so clear cut, photography in this style can encourage the viewer to flatten the complexities of the issues at hand. This, along with the fact that the products of photojournalism are primary sources that we use to understand the

past, can result in misremembrance and mischaracterization. Photojournalists often worked to expose the ills of the world, and their works were featured in publications with large readerships, such as *Life* magazine. The produced images certainly spread awareness, but the efficacy of the works in inspiring real change or empathy is less clear.

The distinction between photojournalism and other more “artistic” forms of photography is unclear and often subjective, but for the most part, art photography is defined by S. D. Jouhar as “creating images that evoke emotion by a photographic process in which one’s mind and imagination are freely but competently exercised” (261). The resulting images rely on the personal skill, interpretation, and control of the artist.

The primary sources I examined include magazines and newspapers that published civil rights photography. The captions to these images and their accompanying articles will provide information about how these photos were perceived and demonstrate how they were interpreted.

Jet magazine was founded in 1951 with the goal of providing “news coverage on happenings among Negroes all over the U.S.—in entertainment, politics, sports, social events as well as features on unusual personalities, places and events” (*Jet*). This magazine, along with *Ebony*, were the first to fill the void in American publications that catered to African Americans. When the Civil Rights Movement began to pick up steam, *Jet* kept up with the events and kept its audience well informed. The audience of *Jet* ranged from middle to working class African Americans. With the publication’s availability through the mail, as well as in corner stores, liquor stores, and barbershops, it had an average circulation of about 900,000 (Finkleman).

Life magazine was originally a humor magazine until it was acquired in 1936 by Henry Luce, who rebranded the magazine into a weekly news publication with a focus on photography. In a mission statement by Luce, the goal of *Life* magazine is to publish powerful photographs and give Americans the opportunity “to see life; to see the world; to eyewitness great events—to see and take pleasure in seeing; to see and be amazed; to see and be instructed” (Kudlik). *Life* had a large audience that was largely composed of white middle Americans whose politics ranged from moderate to progressive.

Popular civil rights photography and the channels that interpreted them characterized activists as victims, ignored the issues that they were fighting, and mischaracterized the next generation of civil rights activists. The resulting narrative

is easier to digest for moderate white Americans then and now. At the time, Americans whose Cold War politics rejected any form of “radical” leftist action, also knew that domestic racial turmoil put America’s international prestige at risk. This narrative allows them to navigate that balancing act of ‘solving’ American racism, while not engaging with or in any political action that could be understood as communist. Middle America today uses this narrative to feed into the assumption that the Civil Rights Movement defeated racism and that it is longer a chief concern in the 21st century.

As our consensus memory commemorates the bravery of the activists and the work they did, it does not do that work justice and mischaracterizes the movement. This carries over to the consensus understanding and interpretation of contemporary civil rights activists.

Photography has long been an important part of African Americans’ struggle for equality. The oppressors have used it to maintain their subjugation, and it has also been used by African Americans and sympathetic parties to fight against it. From the beginnings of slavery, white anthropologists used daguerreotypes of enslaved African Americans as evidence of their racial inferiorities and to bolster white supremacy (Clay). To counter this negative imagery, African Americans like Frederick Douglass and Sojourner Truth had photographs taken that reflected a proud, respectable, and educated black citizen that many white American had never seen before (Clay). Images like these, along with photographs that revealed the brutalities that slaves experienced, helped to shift public opinion about African Americans (Clay). Into the reconstruction era and beyond, the images of lynched, mutilated black bodies circulated as souvenir postcards in the communities that committed the atrocities, sending the message that extrajudicial violence against African Americans was the norm (Berger 52). When activists circulated similar images in antilynching pamphlets, the message changed, and now advocates against what it depicts, instead of celebrating it (Romano). Throughout the civil rights struggle, images have mobilized action and inspired sympathy for African Americans. During the modern phase of that struggle, the Children’s Crusade produced some of the most powerful imagery of the movement.

The Children’s Crusade began on May 2, 1963. On this day, hundreds of school kids, from 7 to 18 years old, skipped class to march from the 16th Street Baptist Church to downtown Birmingham, Alabama, to protest segregation. On this first day of the march, Birmingham police arrested hundreds of children, which sparked the next few days of protest (Cook 32). The following day, hundreds

more demonstrators marched from the church to downtown. Birmingham and its Commissioner of Public Safety, Eugene “Bull” Connor, responded with brutal force. Connor ordered the police to attack the protestors with batons, police dogs, and water hoses (London). The children’s march was part of a larger plan to combat segregation with nonviolent demonstrations developed earlier that year by the Southern Christian Leadership Conference and the Alabama Christian Movement for Human Rights. The goal of using children in this demonstration was to garner more media attention and raise the stakes in order to increase the momentum of the movement and gain more volunteers (London). Compared to adult demonstrators who could potentially lose their jobs by participating in a march, children had no such commitments or responsibilities, and more readily joined demonstrations (London). The organizers also counted on peer pressure to get children out to the march (London). Photography and video footage of the violent clash circulated widely in the United States and abroad (Cook 32). The images sparked sympathy for the civil rights cause as well as outrage towards the Birmingham police force and civil rights leaders for putting children in such danger (Cook 32). Despite the controversy, the marches and ensuing chaos pushed city leaders in Birmingham to finally sit down with civil rights leaders on May 10, just over a week after the initial march. At this meeting, the group decided that businesses in downtown Birmingham would be desegregated and that everyone who was arrested during the demonstrations would be released (Momodu). In the end, the demonstrations unified the black community in Birmingham, increased support for the civil rights organizations involved, and helped those organizations reach their goals (Cook).

Out of these demonstrations came a set of photographs that shocked the nation. The images were of young African Americans trying to defend themselves from fire hoses and police dogs. There were many photographers on the scene of the demonstrations, but some of the best-known images were taken by Charles Moore. A white journalist from Alabama, Moore photographed demonstrators, white segregationists, Klan members, and King throughout his career (O’Neill). Moore used his camera as a weapon to fight against the inequalities he grew up seeing. He used a short lens camera and immersed himself in the action (O’Neill). This allowed him to take close, sometimes intimate photographs of his subjects. At the time of these demonstrations, Moore was working as a freelancer with an agency that sold his work to many publications, including *Life* magazine (O’Neill).

Charles Moore's Photo of Young Demonstrators in Children's Crusade

In Moore's *Firefighters Aiming High-Pressure Water Hoses at Civil Rights Demonstrators, Birmingham, Alabama* with the fire hose, three demonstrators, a young woman and two young men brace themselves against a wall, cringing in anticipation of the powerful stream of water. There is a great amount of detail in this photograph. The face of the young woman and her expression are visible, as well as her earring and the watch of the young man being hit by the water. The soaked clothing clinging to their bodies shows that everyone in this group has already been hit by the water hose, and that they are not running away, exemplifying the nonviolent, nonresponsive tactics they were trained in before marching ("Birmingham and"). These young protestors stay steadfast despite the blast from the water hose, which comes from out of frame and appears disembodied. Context tells us that white firefighters are behind the hoses, but in this image, an abstract enemy that embodies white violence is implied. The stream of water in this black and white photo is the brightest, whitest thing in frame. The stream is also perfectly horizontal, which contrasts with the organic, fluid gestures of the protestors.

This photo appeared along with many others in the May 17 issue of *Life* magazine in a photo essay called "They Fight A Fire That Won't Go Out: The Spectacle of Racial Turbulence in Birmingham." The title refers to the firefighters in the cover image of this story. The photo shows a group of three firefighters aiming a blast of water from a firehose at a group of black protestors kneeling on the curb. This article briefly discusses the violence black protestors were met with in Birmingham but describes it as an expected consequence of nonviolent demonstrations. The opening paragraph of the story reads, "[The brutal methods used by white policemen in Birmingham] are frightening because the Negro strategy of 'nonviolent direct action' invites that very brutality – and welcomes it as a way to promote the Negroes' cause," ("The Spectacle"). While it is accurate that the SCLC did anticipate the brutality of law enforcement to cultivate public sympathy for their cause, the magazine implies that the violence is the fault of the demonstrators for simply attempting to demonstrate. The story continues by discussing the racial divide in Birmingham widening on account of the demonstrations because the movement "[has] forced white communities to start desegregating," ("The Spectacle"). Black people are at fault for the violence they wrought upon themselves and are somehow interlopers into communities they have lived in their whole lives that are dominated by a white power structure. The article also attempts to mitigate any sympathy garnered by the photography by implying that the march

and the violence were designed to explicitly manipulate the American people into supporting the Civil Rights Movement. The magazine described the march as “personally led” by King and goes on to say the police dogs and fire hose would “reward [the movement] with an outrage that would win support all over the world for Birmingham’s Negroes” (“The Spectacle”). It also describes the violence as “the attention-getting jack pot of the Negroes’ provocation” (“The Spectacle”). This language strips the activists of their agency. It suggests that every demonstrator present is a pawn of civil rights leaders like King while ignoring the issues they are demonstrating for.

The article concludes with interviews from a variety of white citizens of Birmingham. The question is “What now?” and how Birmingham will move forward amid such powerful calls to end segregation. The consensus is that desegregation will come eventually, but the way that the civil rights demonstrators are going about it is wrong. Morgan Knight, a car salesman, said, “If they keep trying to shove this thing down people’s throats there is going to be real trouble. They are just making people mad” (“The Spectacle”). Dr. Frank Buchanan, a minister, said, “This thing has to be solved by a process of evolution. A lot of good intelligent Negroes understand this, but they can’t speak out for moderation because the Kings and other outsiders accuse them of selling out their race” (“The Spectacle”). Others described the demonstrations as “ill-timed” and criticized the “use” of children in the march. Some of those who were interviewed were more sympathetic such as Carder Higgins, a management trainee who said, “I guess if I were in their shoes I might do the same thing. I think we’ve handled it wrong” (“The Spectacle”). A high school teacher, who asked for their name to be excluded from the interview, spoke to how unprepared white Birmingham citizens are for social change, and that if some effort had been put in to prepare them, they would not be as bigoted. The teacher said, “To me the solution is very simple: treat human beings as human beings. But to many of these people, Negroes are not human beings” (“The Spectacle”). The last word of the article goes to George Seibels, a city council member. He describes the march as unfortunate, unlawful, and untimely, and finishes his statement with, “They have done everything to upset what hope we had for making progress” (“The Spectacle”). The inclusion of the diverse array of white voices and the exclusion of the thoughts, hopes, or opinions of any Black demonstrators reinforces the idea that they are pawns of King and have no agency of their own.

Another well-known photo from the Children’s Crusade is Bill Hudson’s photograph of an officer and his police dog attacking a young black man. Hudson

was a white man from Detroit who worked as a photojournalist for over 30 years. He began his career as an army photographer, and he was working for the Associated Press when he photographed the demonstrations (“Bill Hudson”).

Bill Hudson’s Photo of Walter Gadsen at Children’s Crusade

In Hudson’s *Kennedy Civil Rights* photo, a white police officer grabs a black teenager by his shirt while his police dog lunges at the boy’s torso. The young man is leaning forward, into the dog. On his face is an expression of determination and no fear. Both officers are the only white people in the photograph, and their faces are partially hidden as one is turned away from the viewer and the other is wearing a hat and dark sunglasses. In the background, a group of black onlookers watches the scene play out in front of them but does not intervene. They do not display any fear, neither of the officers and their dogs or for the boy’s well-being.

On May 4, Hudson’s photo made the front page of the *New York Times* along with a report on the demonstrations titled “Dogs and Hoses Repulse Negroes at Birmingham.” The article provides figures for the number of people in attendance at the march and arrests, as well as details about the route marchers took. What follows is a discussion of how the SCLC intends to continue the marches until the white leaders of Birmingham meet them at the negotiation table and reactions to the march from white Birmingham officials. Like the *Life* article, this *New York Times* piece strips the demonstrators of their agency through the language they use to describe the situations they found themselves in. The caption to Hudson’s image reads, “Police dog lunges at demonstrator during the protest against segregation in Birmingham” (Hailey). The article describes the officers as “largely successful in dispersing the marchers” and how young demonstrators “were knocked sprawling” by firemen (Hailey). The dogs, police officers, and firemen act upon the demonstrators, who apparently do nothing in response. This kind of language victimizes the demonstrators by referring to them passively. They are not taking action, rather they are acted upon.

The voices of the demonstrators are largely missing from this article. They are represented by the photographs, but no statements by anyone marching that day was included. While the article includes statements from King about how the movement plans to move forward from this event, he is presented as a representative of all demonstrators that day, and while he did participate in leading and organizing this march, this depiction of King paints him as a ringleader of sorts,

as if he is personally responsible for the actions of every demonstrator present that day or that the demonstrators will blindly follow any instructions from King (Hailey).

This same image was also published in *Jet* magazine in October of that year in an article titled “Picture Seen Around World Changed Boy’s Drop-Out Plan.” The article was an interview with the young man in the photograph who was revealed to be Walter Gadsen, a high school student who wasn’t a demonstrator on May 3, but an observer. The article also shows that Gadsen was in fact defending himself from the dog in the famous image. It describes how he grew up with a large dog and how his father told him how to protect himself around animals. The article continues with Gadsen’s description of the moment captured by the photo, and how the events of that day changed his plans for the future. He told the magazine, “Before I went downtown (to watch the marching) I wanted to drop out—but now I don’t feel the same way. Not anymore. I decided to finish school and go on to college” (Adams). This article does not give us the context on the march or report the events that took place that day in detail, but *Jet* magazine consistently covered the Civil Rights Movement throughout the mid-1950s to the late 1960s (Finkelman 25). The purpose of the article is not necessarily to report on the march, but to humanize the young man in the famous photograph.

The missing voices of the demonstrators, along with King representing the entire march, suggests that demonstrators aren’t marching of their own free will or to make changes in their lives, but to further the agenda of civil rights leaders and to provoke the white establishment. The photos used by *Life*, the *New York Times*, and other publications with a majority white audience illustrated the violence, but to emphasize the spectacle and not to garner sympathy. Any sympathy that may be garnered by the photographs is mitigated by the captions and article text that puts them in passive roles, which hides how much courage and effort goes into participating in a march. While these photos helped to bring attention to the mistreatment that African Americans were experiencing, they did not necessarily result in sympathy for the Civil Rights Movement. Many Americans still did not care as evident by letters to editor pages that featured letters that praised police restraint and condemned black violence during the march (Berger 13). With *Jet* magazine, the photograph did not illustrate the story, it was the story. Their article was about Walter Gadsen and his experience that was captured on film. They used his own words, and as the other publications victimized the subjects of the photographs they used, *Jet* depicted Gadsen as an individual with personal motivations.

Often perceived as the great victory of the Civil Rights Movement, the March on Washington for Jobs and Freedom, or the March on Washington, took place on August 28, 1963, 100 years after the Emancipation Proclamation. This wasn't the first March on Washington by civil rights activists, but it's certainly the most well-known. The first march in 1941 was conceived by A. Philip Randolph and Bayard Rustin as a protest against the National Defense Industry and its exclusion of black workers (Kindig). The 1963 march was organized by a coalition of leaders of different civil rights organizations and non-black religious and unions. The ten organizations that were represented were the Congress of Racial Equality, the Negro American Labor Council, the Southern Christian Leadership Conference, the Student Nonviolent Coordinating Committee, the NAACP, the National Urban League, the National Council of Churches, United Automobile Workers, the National Catholic Conference for Interracial Justice, and the American Jewish Conference ("Official Program"). There was disagreement over what exactly the goals of the march were going to be, but the group decided that the focus would be on the passage of strong federal civil rights legislation, the end of school segregation, an increased minimum wage, and public works programs for the unemployed. On the day of the march, 250,000 people converged on Washington D.C. from all over the country and marched from the Washington Monument to the Lincoln Memorial. There, a varied lineup of speakers and performers addressed the diverse audience. The last speaker of the day was Martin Luther King Jr., who delivered his "I Have a Dream Speech," which is not only cited as the most important speech given at the march, but also as one of the greatest speeches of the 20th century (Eidenmuller). All in all, the March on Washington was deemed a success by organizers and participants. It is often cited as a key factor leading to the passage of the Civil Rights Act of 1964 and the Voting Rights Act of 1965 ("March On").

This historic march was very well documented. It was broadcast live, and the designated areas for the press were at capacity. One of the photographers in attendance was Gordon Parks. Born on November 30, 1912, in Fort Scott, Kansas, Parks began his career in fashion photography ("Biography"). He went on to become the first Black photographer on staff at *Life* magazine ("Biography"). Many of his assignments at *Life* centered on Black American life including his photo essays on segregation, youth gangs in New York, and Black Muslims ("Biography"). At the march, Parks was one of the *Life* photographers on assignment, and his photographs emphasized the historic nature of the event.

Roy DeCarava's Mississippi Freedom Marcher

In Roy DeCarava's photograph *Mississippi Freedom Marcher, Washington, D.C., 1963*, a young African American woman looks intently off frame. To the right, in the foreground, half of a young man's face is visible, but out of focus. Context tells us that these figures are at the March on Washington, but nothing in the image points towards that fact. This image is not about the march, but about the aesthetic quality of this young woman's face, skin, and expression. This image is in black and white, but there are more mid-range tones than a conventional black and white photograph. The rich monochrome makes this photo distinct from other, more photojournalistic photos that would have had a clearer scene and brighter lighting as opposed to this moody lighting and vague setting.

DeCarava has certainly met his goal of depicting African Americans as artistic subjects. He has made this young black woman look beautiful in the face of generations and generations of the white power structure insisting that she couldn't be. His artwork is humanizing, insisting that the viewer look at her and consider her humanity outside of all social contexts. However, by not being explicit about the young woman's role as an activist, DeCarava invites a vague interpretation of the Civil Rights Movement and what white Americans have to do to address issues of black inequality. In this image, the issues at hand have no platform, and someone sympathetic to the Civil Rights Movement may come away from it believing that seeing African Americans as human beings is the solution to the inequalities. In reality, the solution is a combination of social, political, and economic changes that will improve the conditions of African Americans in the United States. King advocates for as much at The Hungry Club Forum in 1967 in his speech, "America's Chief Moral Dilemma." He acknowledges and celebrates the social and legal gains the movement has made but calls for the movement to now push for economic equality and the end of poverty (King).

These photographs and others like it ignore the goals of the march and the demands of its organizers, and that effects how we remember the march. This is evident by how we remember the march as the March on Washington and not the March on Washington for Jobs and Freedom. We remember the march as a great success because of how peaceful and integrated the march was, as well as the laws that were passed in its wake, but the laws passed did not successfully meet the demands of the organizers. Photojournalism can generalize the movement, and art photography can hone in too closely onto the individual. They both approached the march with the intention to put it and attendees on display to demonstrate how

historic and beautiful the moment was but ignored the issues that the marchers and organizers were focused on, which contributes to how our consensus memory misremembers the event. Like the March on Washington, the popular photography of the Black Panthers misrepresents their goals.

By 1966, “radicals” of the Civil Rights Movement began to break away from existing organizations and create new ones. Young activists of existing civil rights organizations were frustrated by slow reforms, violence against nonviolent demonstrators, and broken promises. The organizations they established had a new intensity and sense of urgency in regard to achieving their goals. The Black Panther Party for Self-Defense was one of these organizations. Cofounded by Bobby Seale and Huey P. Newton in 1966 in Oakland, California, the Black Panthers were organized with the original intent to protect African Americans from police brutality. Their Ten Point Platform and Program called for self-determination, improved education, an end to police brutality, freedom, free healthcare, black history in schools, the release of black prisoners, and an end to the murder of black people (Speltz).

The Black Panthers on the Steps of Washington State Capitol



Figure 1. *Black Panthers on steps of Legislative Building, Olympia* used by permission of Washington State Archives

The Black Panthers were perceived as provocative and dangerous, and photography played a big role in that idea. In this photo, quintessential to the Black Panther image, six members of the party stand armed on the steps of the state capitol in Olympia, Washington. In dark clothing, they stand out against the pale marble of the columns. The Panthers stand in formation and brandish their weapons, not as a threat, but for protection. This is also a display of the organization's discipline and control. While this photo out of context may look like an unwarranted demonstration of power, the Black Panthers here are protesting a proposed law that would restrict the ability to be publicly armed, which was vital for Panthers because a lot of their work revolved around protecting African Americans from police brutality (Gregory).

These kinds of images were often accompanied with language that described the Black Panthers as violent, especially when compared to their nonviolent predecessors. Their systems of protecting black communities were looked at negatively, and they were seen as a threat to the status quo and to the progress that civil rights groups had previously made. The image of armed black people who were not going to ask for what their communities needed but provide for those needs was a new and frightening sight for many Americans (Shaefer). These images do not necessarily miss the mark of the Black Panthers' message, but they are missing a key part of it: community programs.

A Photo from Ruth Marion Baruch's Black Panthers Series



Figure 2. Ruth Marion Barauch's *Charles Burse serving children at Panther breakfast program, St. Augustine's Episcopal Church* used by permission of Regents of the University of California

This photograph shows a Black Panther serving breakfast to school aged children. The man leans forward over a young girl and carefully places a plate of food in front of her and another child. The girl looks down at her plate with a smile. Next to and across from her are more children waiting for their meals. The focus in this photo is on the action of providing for others. The Black Panther's arms, both holding plates of food, take up a good amount of the horizontal space in the image. They also frame the young girl receiving the food, emphasizing the joy in this interaction.

The man in the photo is Charles Burse, and he is serving during one of the Black Panthers' many community programs (Baruch). Images like this display an important part of the politics of those movements. Community programs that directly provided for the needs of disadvantaged African Americans by providing food, housing, education, protection, clothing, and more helped to support the idea of an independent African American community (Shaefer). They also helped people get what they needed at a faster pace compared to how long it took to change legislation.

Our consensus memory is inundated with images of militant Black Panthers and the corresponding stories but remembers very few images and stories that show them providing for their community. Publications like *The New York Times* focused heavily on the militancy and treated the community programs as publicity stunts to garner sympathy (Russonello). This contributes to the exclusion of Black Power from the narrative of the Civil Rights Movement, which delegitimizes the work they have done. This mischaracterization of the movement turned moderate white Americans who had supported the Civil Rights Movement against it and slowed the momentum for this phase of the Civil Rights Movement.

Conclusion

These photographs and the narratives that accompany them are important because they influence the construction of our consensus memory of the Civil Rights Movement. They are the visual language for how we discuss this movement, and they support certain commemorative narratives about this time period. Our consensus memory celebrates nonviolent protestors but strips them of their agency and victimizes them, ignoring how much work and courage goes into organizing and participating in a demonstration. The March on Washington is regarded as a great success when it did not result in the changes that the organizers hoped for. Instead, the photographs we use to teach, celebrate, and remember the events of

the Civil Rights Movement, emphasizing them as spectacles rather than campaigns for racial justice. Our consensus memory commemorates these moments of the Civil Rights Movement but condemns the black power movement in its entirety without understanding the whole of their politics. Our consensus memory celebrates the Civil Rights Movement for the brave, historic, and important work done by activists during that time, but by misremembering the movement, we do a great injustice not only to those activists, but also to contemporary activists who seek to continue the work done by their predecessors.

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The Mystery of Negative and Imaginary Logarithms

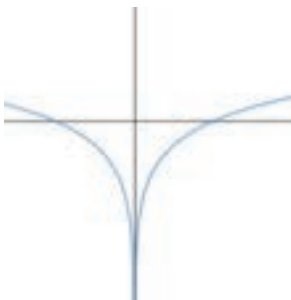
By Kylie Brous

Leonhard Euler was one of the greatest mathematicians, whose profound impact on the field is still felt today. He created the “the notation $f(x)$ for a function (1734), e for the base of natural logs (1727), i for the square root of -1 (1777), π for pi, \sum for summation (1755), and many others” (O’Connor and Robertson). Euler was born on April 15th, 1707 in Basel, Switzerland and died on September 18th, 1783 in St. Petersburg, Russia. Growing up he did not attend any school that taught much mathematics and learned most of his mathematics from his father, Paul Euler, who studied under the eminent mathematician Jacob Bernoulli (1655-1705). Before Euler became a mathematician, he studied ministry at the University of Basel; however, in 1723 he convinced his father to let him study mathematics since studying religion did not interest him like mathematics. During his time Euler had “reconstructed many of the works that [he] read with the advice of Johann Bernoulli [the brother of Jacob]. They include works by Varignon (1655-1722), Descartes (1596-1650), Newton (1642-1727), Galileo (1564-1642), van Schooten (1615-1660), Jacob Bernoulli (1655-1705), Taylor (1685-1731) and Wallis (1616-1703)” (O’Connor and Robertson). He went on to accomplish many great mathematical and personal feats, publish hundreds of works and inventor standardize many aspects of mathematics. One of these pieces included “*Sur logarithmes des nombres negatives et imaginaires*” (On the logarithms of Negative and Imaginary Numbers). The article was not published during Euler’s lifetime, but only in his *Opera postuma* in 1862. (Bradley 269)

I will examine that paper listed as E807 in the online Euler Archive (“Euler Archive”) and translated by Todd Doucet (Doucet), with his notes noted in <angle brackets> while my comments are in [square brackets]. Propositions 1-4, omitted here, are a summary of Jean Bernoulli and Leibnitz’s letters to one another about the existence, or lack thereof, of negative logarithms. Bernoulli claims that $\ln(x) = \ln(-x)$. Leibnitz disagrees saying that one cannot take the logarithm of negative numbers. The rest of Euler’s paper examines how the logarithm of negative and imaginary numbers may or may not exist, and then builds upon that. I have also

marked certain parts of Euler's text in **bold** along with some of my comments as signposts to his argument and summaries thereof. Some additional propositions have been omitted due to how they are needed for Euler's argument. I will be starting with Proposition 5.

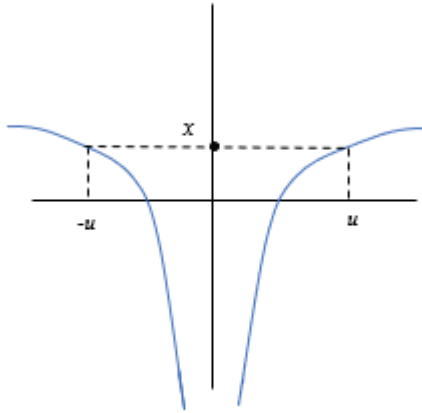
5. In the same passage which I just examined, Bernoulli makes use of still another argument, but one which differs from the preceding only in the way it is said, when he holds that the logarithmic curve has, from two sides of its asymptote, two equal and similar parts, so that to each abscissa or logarithm [vertical coordinate] there correspond two ordinates or equal numbers [horizontal coordinates], one positive and the other negative. This reflection is sufficient to show that we cannot



For, considering the [differential] equation of this curve

$$ydx = ady,$$

where x indicates the abscissa [vertical coordinate] taken on the asymptote of the logarithm, y the ordinate [horizontal coordinate], and a the constant subtangent, [Here, $x = \log_b y$ where $b > 0$. Recall: $\log_b y = \frac{1}{\ln(b)} \cdot \ln(y)$. So, $\frac{dx}{dy} = \frac{1}{\ln(b)} \cdot \frac{1}{y}$ yielding his equation $ydx = ady$ where $a = \frac{1}{\ln(b)} > 0$. Also, the "constant subtangent" is the vertical distance from the height x to the point on the $y = 0$ vertical axis where the tangent to the curve at (y, x) intersects that axis] it would seem to follow that, if to the same abscissa [vertical coordinate] x there corresponds the [horizontal] value $y = u$, it will correspond also to $y = -u$,



since, if $+udx = +adu$, we will also have $-udx = -adu$. But this reasoning is similar to the preceding, and it would follow from it as well that to each abscissa [vertical coordinate] x , there would also correspond the ordinate [horizontal coordinate]

$y = 2u$ [if $(2u)dx = adx$, then $-(2u) = -adu$], and in general $y = nu$, so that this curve would have not only two ordinates, $y = u$ and $y = -u$, which would correspond to the abscissa [vertical coordinate] x , but the number of ordinates [horizontal coordinates] would be infinite. This is a consequence, however, that we are quite a long way from admitting.

From this [number of ordinates] **we see that this argument does not prove that the logarithm has two similar branches on two sides of its asymptote.**

6. But one will perhaps object that it is nevertheless the surest means to judge the shape of a curve and the number of its branches by its equation, and that it is by this principle that the geometers determine the forms of all the algebraic curves. To which I respond that this method has a place only when the equation for the curve is algebraic or at least conceived in finite terms, and that a differential equation is never appropriate to this design. For we know that a differential equation is always indeterminate, because of an arbitrary constant it includes which we must introduce in the integration, so that such an equation always embraces an infinity of curves at the same time. We only have to look at the differential equation for the parabola

$$2ydy = adx$$

[Here we have

$$\begin{aligned}
 ax &= y^2 \\
 x &= \frac{1}{a} y^2 \\
 \frac{dx}{dy} &= 2 \cdot \frac{1}{a} y \\
 adx &= 2y dy
 \end{aligned}$$

and we will see that it contains not only this finite equation

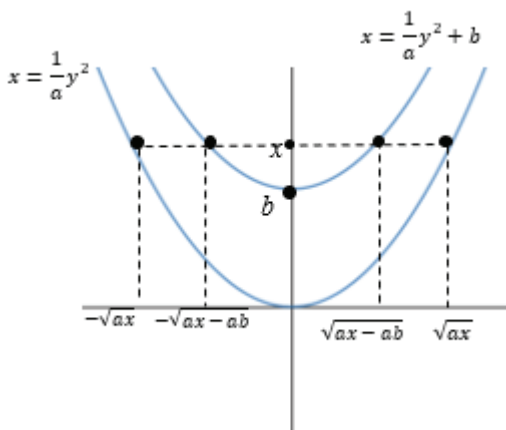
$$y^2 = ax,$$

but also this one

$$y^2 = ax \pm ab,$$

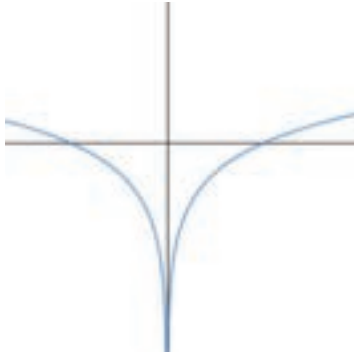
whatever value we give to the quantity b [$\pm ab$ is the constant of integration]. Consequently, by considering only the differential equation $2y \, dy = a \, dx$, we would have to conclude that to the same abscissa [vertical coordinate] x there corresponds not only the ordinate [horizontal coordinate] $y = \sqrt{ax}$, but again $y = \sqrt{ax \pm a^2}$, and in general $y = \sqrt{ax \pm ab}$.

[Squaring the last equation we have, $ax \pm ab = y^2$, then solving for x , we have $x = \frac{1}{a} y^2 \pm b$. The graph when + is chosen is $x = \frac{1}{a} y^2 + b$ which looks like:]



This reflection is sufficient to show that we cannot judge the shape of a curve by looking at only its differential equation.

7. Now, Bernoulli, as well as several mathematicians who also hold the same belief, try to prove by still other arguments that the asymptote of the logarithm is at the same time its diameter [a line dividing the graph into two equal parts.]



These arguments are based either on the construction of this curve, or else on analogy. One makes use of analogy by considering, instead of the equation for the logarithmic $dx = \frac{dy}{y}$, this more general one [when $n = 1, 2, \dots$]

$$dx = \frac{dy}{y^n}$$

whose integral is

$$x = C - \frac{1}{(n-1)y^{n-1}}$$

$$[\int dx = \int y^{-n} dy$$

$$x = \frac{y^{-n+1}}{-n+1} + C]$$

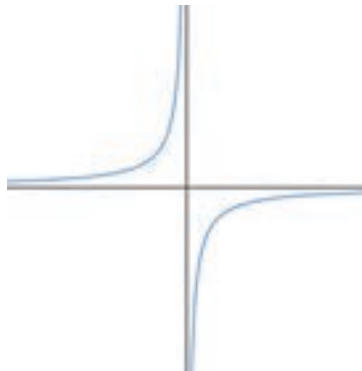
We note here that whenever n is an odd number [$n \geq 3$], the curve has, without question, a diameter, or two equal and similar branches.

$$[n = 3, C = 0]$$

$$[n = 5, C = 0]$$



[whereas an even number n produces a graph like the $n = 2$ case below]



which has two unequal branches.]

This noted, the argument is that we suppose $n = 1$, and since 1 is an odd number, the logarithmic [by analogy] must have the same property.

This [argument] is, in my opinion, the strongest that we have heretofore brought for proving that the logarithmic has a diameter. But I will nevertheless show that this conclusion we want to draw is not sufficiently certain.

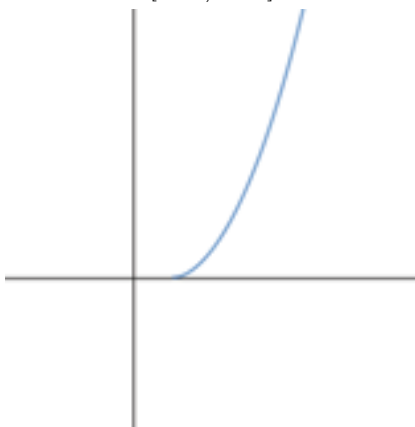
[We skip 8]

9. One will perhaps doubt that judging the property of a diameter is subject to exceptions similar to what we must recognize in integration [where different constants result in different curves]. But I will show very clearly that, even for the

algebraic curves [that can be written as equations in powers of the variables x and y], it is often necessary to admit some exception relating to the property of diameters. Let us consider, for example, this general equation [recall x = vertical, y = horizontal.]

$$y = \sqrt{(ax)} + \sqrt[4]{(a^3(b+x))}$$

$$[a = 1, b = 1]$$



and we will not hesitate to conclude that this curve always has a diameter, since by reducing it to a rationality [taking powers of the equation until there are no more roots] we reach an equation of degree 8 where all the exponents of the powers of y are even. [In such a case, for example, either d or $-d$ substituted for y yields the same x -values] But, however certain this conclusion seems, we must exclude from it the case where $b = 0$. For then, if we free the equation $y = \sqrt{(ax)} + \sqrt[4]{(a^3x)}$ of irrationality [again, taking powers of the equation until there are no more roots], we will have precisely

$$y^2 - 2y\sqrt{(ax)} + ax = \sqrt{(a^3x)}$$

or

$$y^2 + ax = (2y + a)\sqrt{(ax)}$$

and therefore, taking the squares again

$$y^4 + 2axy^2 + a^2x^2 = 4axy^2 + 4a^2xy + a^3x$$

or

$$y^4 - 2axy^2 - 4a^2xy + a^2x^2 - a^3x = 0$$

[Graph of $y = \sqrt{(ax)^4 + (a^3x)}$ when $a = 1$]



which, because of the $4a^2xy$ term; is lacking a diameter [since in $4a^2xy$, y is not taken to an even power]. So, since in the algebraic curves we are obliged to sometimes recognize exceptions, how can we be assured that the case in question does not require them also?

And therefore, more is required for the given argument to prove invincibly that the logarithmic has a diameter.

As seen in the propositions above, the graph of a curve is not always symmetrical about a diameter. For Euler to be able to come to the future conclusion about the existence (or lack thereof) of negative/imaginary logarithms, he must show and explain why the logarithmic curve should have a diameter. In Proposition 7, Euler shows that an odd n -value produces a logarithmic-type graph with a diameter. However, this is only true when n is a positive value. Another example is in Proposition 9 when he discovers that more information about logarithmic curves is needed to give a sound argument, since even algebraic curves sometimes fail to have a diameter.

10. The same uncertainty is found in the other arguments we derive from the construction of the logarithmic curve by the quadrature [finding the area under the curve] of the hyperbola. For even when we would turn this construction so that it necessarily results in two branches of the logarithmic, we would still have quite

strong reasons for doubting that these two branches necessarily belong together and that they constitute only a single continuous line. To prove this [that these two branches necessarily belong together and that they constitute only a single continuous line], I could relate several examples of constructions by which we obtain two different curves that are not connected by the link of continuity. For, since we can always encompass two curves, however different they may be, under one equation, by multiplying their equations together, we only have to imagine a construction [that] fits this given composite equation, and it will furnish the two given curves, as if they formed only a single curve. Indeed, having described on the same axis the two parabolas

$$v^2 = ax \text{ and } u^4 = a^3x$$

let us construct from them a new curve whose ordinate y [horizontal coordinate], corresponding to the same abscissa x [vertical coordinate], will be equal to the sum of the ordinates $v + u$ of the two given parabolas. Since each of these ordinates may be taken positively or negatively, we will find, for each abscissa [vertical coordinate] x , four ordinates $v + u$, $-v - u$, $v - u$, $-v + u$, and the constructed curve will have a diameter. Nevertheless, the equation [where $v = \sqrt{ax}$ and $u = \sqrt[4]{a^3x}$]

$$y = v + u = \sqrt{ax} + \sqrt[4]{a^3x}$$

shows us that the curve does not have a diameter [the graph has only one branch], as I just noted in the preceding article.

11. Furthermore, just as there are constructions from which we derive two different curves, there are also defective constructions which give only one part of a curve. For, let a circle be described whose diameter is a , on which taking the abscissa equal to x [vertical coordinate], the ordinate y [horizontal coordinate] will be equal to $\sqrt{ax - x^2}$ [a semi-circle].

[In our modern variables, $x = \sqrt{ay - y^2}$ comes from

$$x^2 = ay - y^2$$

$$x^2 + y^2 - ay = 0$$

$$x^2 + \left(y - \frac{a}{2}\right)^2 = \left(\frac{a}{2}\right)^2 .]$$

Let us then extend each ordinate [horizontal coordinate] until it becomes equal to the chord [equation] $\sqrt{x^2 + y^2} = \sqrt{ax}$ and this new ordinate [horizontal value], which we name $z = \sqrt{ax}$, will indicate a parabola.

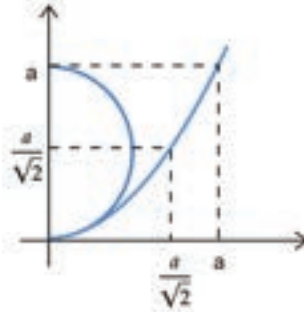
[In our modern variables,

$$z = \sqrt{ay}$$

$$ay = z^2$$

$$y = \frac{1}{a} z^2.]$$

But this description of the parabola does not extend beyond the circle, though the parabola itself extends to infinity.



This circumstance proves yet again that it is not always certain to judge the true form of a curve, and all the parts it contains, by whatever construction one might give.

12. Moreover, the method itself of judging all the parts which belong to the same curve is appropriate only for algebraic curves... [rest omitted]

13. Logarithms are based on a constant [positive] number, taken arbitrarily, whose logarithm we suppose to be equal to 1. Let this number [base] be e , and let x indicate the logarithm of the number y , so that $x = \ell y$, and we will then have $y = e^x$. Therefore, the logarithm x of a given number y [$\log_e y = x$] is nothing other than the exponent of the power of e which is equal to the number y [$e^x = y$]. In the common tables, we assume this arbitrary number $e = 10$, and then x will be the logarithm of the number y , if $10^x = y$; and in the logarithms that we call hyperbolic [natural] and which have the property that, if ω indicates an infinitely small fraction, the [hyperbolic] logarithm of the number $1 + \omega$ is equal to ω

[$\ln_e (1 + \omega) = \omega$. This follows because, in our notation, $\ln(1) = 0$ and the slope of the tangent line to the graph of $\ln(x)$ at the point $(1,0)$ is

$\frac{d}{dx} (\ln(x))|_{x=1} = \frac{1}{x}|_{x=1} = 1$, yielding the tangent line $y = x - 1$. If we move an “infinitely small fraction” ω to the right of 1, the graph and the tangent are

still approximately equal, $\ln(x) \approx x - 1$ hence $\ln(1 + \omega) \approx (1 + \omega) - 1 = \omega$], the number e , whose the logarithm is 1 [$\ln_e e = 1$], becomes equal to 2.718281828459.

[An algorithm for $e \approx 2.718281828459$.

Recall $\ln(1 + \omega) = \omega$ is the same as $1 + \omega = e^\omega$.

For convenience, switch to $1 + x \approx e^x$.

Take the integral of each side

$$\int(1+x) dx \approx \int e^x dx.$$

$$x + \frac{x^2}{2} + C \approx e^x.$$

Let $x = 0$ to get $C = 1$ and integrate both sides again

$$\int\left(1+x+\frac{x^2}{2}\right) dx \approx \int e^x dx$$

$$x + \frac{x^2}{2} + \frac{1}{2} \cdot \frac{x^3}{3} + C \approx e^x$$

When $x = 0$, $C = 1$, so we have

$$1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} \approx e^x$$

This can continue. For instance, observe, when $x = 1$ that

$$e \approx 1 + 1 + \frac{1}{2} + \frac{1}{3} = 2.66.]$$

Now, whatever value we give to this number e , provided that it is greater than 1, we see from the formula $y = e^x$ that whenever y is a positive number, it is possible to assign to x a real value, so that e^x becomes equal to y . But it is also evident that if y is a negative number, we cannot find a real value for x such that the power e^x becomes negative and equal to y .

[Euler concludes that since $x = \ln(y)$ means $y = e^x$ and e^x is positive for all real values x , then y can never be negative, suggesting that perhaps that the logarithm of a negative number cannot be a real number.]

14. It is true, however, that if x is a fraction with an even denominator [$x = \frac{n}{2m}$, $n, m \in \mathbb{Z}$, $m \neq 0$], the power, or rather the root, e^x may be taken positively as well as negatively

$$\left[e^{\frac{n}{2m}} = \left(e^{\frac{n}{m}}\right)^{\frac{1}{2}} \text{ can be interpreted as } \pm\sqrt{\left(e^{\frac{n}{m}}\right)}\right],$$

so that if the logarithm x is $\frac{1}{2}[x = \ln(y) = \frac{1}{2}]$, the number y whose logarithm is $\frac{1}{2}$ may equally well be $-\sqrt{e}$ as \sqrt{e} .

$$\begin{aligned}
&[\text{Because } (\pm\sqrt{e})^2 = e \\
&\ln[(\pm\sqrt{e})^2] = \ln(e) \\
&2 \ln(\pm\sqrt{e}) = 1 \\
&\ln(\pm\sqrt{e}) = \frac{1}{2} \\
&\ln(y) = \frac{1}{2}.]
\end{aligned}$$

But this ambiguity is encountered only in the case where x is a fraction whose denominator is an even number, and if the logarithm x were $2[x = \ln(y) = 2]$, it would certainly be false that 2 would be the logarithm of $y = -ee [-e^2]$, since $-ee$ is not at all equal to ee ; and

therefore it is necessary to at least admit that the logarithms of negative numbers are not in general real.

But in regard to the ambiguity of the formula e^x in the case where x is a fraction with an even denominator, I do not know if we can allow it in logarithms. For, taking into account the nature and the usage of logarithms, it seems that to each logarithm there may correspond only one number.

15. Be that as it may, we will never prove by similar reasoning that the logarithm of -1 is equal to that of $+1$ or to zero, since e^0 cannot have values other than $+1$. If someone said that e^0 can be regarded as [equal to] $e^{\frac{0}{2}}$ and therefore as $\sqrt{e^0}$ or $\sqrt{1}$, which would be both -1 and $+1$, one would be able, by the same reason, to prove that x^1 , being equal to $x^{\frac{2}{2}}$, would be equal to both $+x$ and $-x$ [$x^{\frac{2}{2}} = \sqrt[2]{x^2} = \pm x$], and furthermore that $a + x$ would be the same thing as $a - x$, and one would be able to hold, by the same argument, that all quantities are equal to each other. But if the logarithm of -1 is not equal to 0 , it will necessarily be imaginary [since it cannot be real by section 13]. And since $-y = -1 \cdot y$, we will have $\ell(-y) = \ell(-1) + \ell(y)$, from which it is clear that when the logarithm of $+y$ is real, the logarithm of $-y$ must absolutely be imaginary. [The sum of the imaginary number $\ell(-1)$ and the real number $\ell(y)$ is imaginary.]

[Here Euler concludes that if $x = \ln(y)$ is real then $\ln(-y)$ necessarily must be imaginary (not real).]

16. The thesis that each logarithm x may correspond to only a single number y will be again confirmed, when we consider the resolution of the formula e^x in this [power] series,

$$e^x = 1 + x + \frac{x^2}{1 \cdot 2} + \frac{x^3}{1 \cdot 2 \cdot 3} + \frac{x^4}{1 \cdot 2 \cdot 3 \cdot 4} + \frac{x^5}{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5} + \dots$$

where e is the number whose hyperbolic [natural] logarithm is equal to 1. This series is regarded in analysis as altogether equivalent to the expression e^x , and we cannot doubt that its value is determined as soon as we give to x a fixed value, since this series is always convergent, however large the number we substitute for x . And for this reason, we are right to hold that since the expression e^x indicates the number whose logarithm is x , it never contains the slightest ambiguity, and that its value is always unique and positive, whatever fraction we may take for x , so that even when x is a fraction like $\frac{1}{2}$, the expression e^x will always have only a single positive value.

[We skip 17-19]

[In the following sections, until 24, the “paradoxes of logarithms will be seen.” (Bradley 270).]

20. Let us say, then, with M. de Leibnitz that the logarithms of negative numbers are not real, but imaginary, and we will soon notice that we have fallen into the same trouble. For, let $\ell(-1) = p$, so that p is an imaginary number, and we will not be able to deny that $\ell(-1)n = np$ [by the power property of logarithms], especially when n is a whole number. So then let $n = 2$, and we will have

$$\ell(-1)^2 = \ell(+1) = 2p.$$

But in the doctrine of logarithms, it is the first principle that $\ell(+1) = 0$. Consequently, we will have $2p = 0$ and therefore $p = 0$, which is contrary to the hypothesis [since 0 is a real number]. We will prove as well that

$$\ell \sqrt[3]{(-1)}, \quad \ell \frac{-1 \pm \sqrt{(-3)}}{2}$$

and the logarithms of the higher roots of unity must all be equal to 0, which results in the same contradictions that were encountered in the preceding hypothesis.

21. Notice, then, that we encounter quite palpable contradictions, whichever way we turn.

I do not doubt that most mathematicians have noticed this [plethora of contradictions], although they have not judged it appropriate to publish their doubts on this matter, for fear of rendering analysis overly suspect, if they were

not in a position to save the theory of logarithms. For it would be without doubt an indelible stain in analysis, if the doctrine of logarithms were so replete with contradictions that it were impossible to find a reconciliation. So for a long time these difficulties tormented me, and I was under several illusions concerning this matter, in order to satisfy myself in some manner, without being obliged to completely overturn the theory of logarithms. I imagined that, just as a quantity always admits two square roots, three cube roots, four biquadratic roots, etc., in the same manner a quantity would be able to have a double half, a triple third, a quadruple fourth, etc. only one of which would be real, the others imaginary. In this way, setting $\ell y = x$, I was thinking that

$$\ell\sqrt[2]{y} = \frac{1}{2}x \text{ and } \ell(-\sqrt[2]{y}) = \frac{1}{2}x'$$

and that $\frac{1}{2}x$ and $\frac{1}{2}x'$ would be different, although the double of either would be the same, equal to x [$2 \cdot \frac{1}{2}x = x$ and $2 \cdot \frac{1}{2}x' = x$]. In the same manner, for the three cube roots of y , it would be [recalling that

$$1^3 = 1, \left(\frac{-1 + \sqrt{-3}}{2}\right)^3 = 1, \text{ and } \left(\frac{-1 - \sqrt{-3}}{2}\right)^3 = 1]$$

$$\ell \sqrt[3]{y} = \frac{1}{3}x, \ell \frac{-1 + \sqrt{-3}}{2} \sqrt[3]{y} = \frac{1}{3}x' \text{ and } \ell \frac{-1 - \sqrt{-3}}{2} \sqrt[3]{y} = \frac{1}{3}x''$$

$$[\ell(\sqrt[3]{y}) = \frac{1}{3}x, \ell\left(\frac{-1 + \sqrt{-3}}{2} \sqrt[3]{y}\right) = \frac{1}{3}x' \text{ and } \ell\left(\frac{-1 - \sqrt{-3}}{2} \sqrt[3]{y}\right) = \frac{1}{3}x'']$$

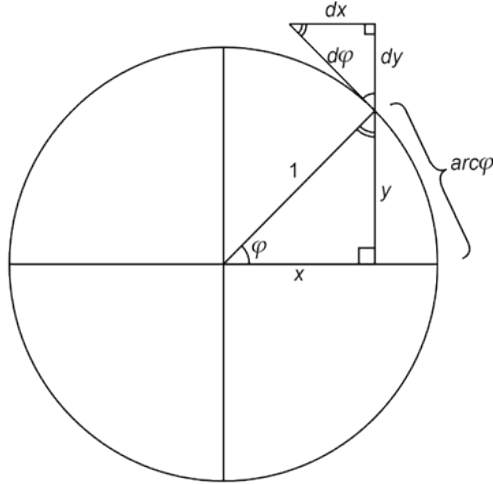
where $\frac{1}{3}x$, $\frac{1}{3}x'$, and $\frac{1}{3}x''$ would be different numbers, the first, $\frac{1}{3}x$, real, and the two others, $\frac{1}{3}x'$ and $\frac{1}{3}x''$, imaginary, although the triple of each would be equal to x

$$[3 \cdot \frac{1}{3}x = x, 3 \cdot \frac{1}{3}x' = x, 3 \cdot \frac{1}{3}x'' = x].$$

This explanation seemed to me extremely paradoxical indeed, and unsustainable, but still less absurd than the contradictions that I would have been obliged to admit in the theory of logarithms of negative and imaginary numbers.

[We skip 22-24]

25. Let φ be an arbitrary arc of a circle, whose radius I suppose to be equal to 1. [The unit circle $x^2 + y^2 = 1$. Recall for Euler, x = vertical coordinate and y = horizontal coordinate, but we will use modern notation.] Let x be the sine of the arc [in our notation $y = \sin(\varphi)$] and y its cosine [$x = \cos(\varphi)$], so that $y = \sqrt{1 - x^2}$ [$x = \sqrt{1 - y^2}$].



This diagram is from Bradley 271]

Then, calling the circumference of this circle 2π , or the arc of $180^\circ = \pi$, it is clear that all the arcs included in this general expression

$$\pm 2n\pi + \varphi$$

will have not only the same sine, $x [y]$, but also the same cosine, $y = \sqrt{(1 - x^2)}$, [here $x = \sqrt{(1 - y^2)}$], provided that n signifies an arbitrary whole number.

Now, since

$$d\varphi = \frac{dx}{y} = \frac{dx}{\sqrt{(1 - x^2)}},$$

$$[d\varphi = \frac{dy}{x} = \frac{dy}{\sqrt{(1 - y^2)}}]$$

Let us suppose

$$x = zi,$$

$$[y = zi]$$

<Most occurrences of $\sqrt{(-1)}$ in the original are represented here using the symbol i .>

and we will have

$$d\varphi = \frac{idz}{\sqrt{(1 - z^2)}}.$$

But we know that $\int \frac{dz}{\sqrt{(1-z^2)}} = \ell(\sqrt{(1+z^2)} + z) + C$.

Consequently, we will have

$$\varphi = i\ell\left(\sqrt{(1-x^2)} + \frac{x}{i}\right) + C,$$

[meaning $\int d\varphi = \varphi = \int \frac{idz}{\sqrt{(1-z^2)}} = i\ell\left(\sqrt{(1-y^2)} + \frac{x}{i}\right) + C$, recalling $y = iz$ and $i^2 = -1$ and elementary calculus integration by trigonometric substitution]

where it is clear that the constant C is equal to zero, since by setting $x = 0$ the arc φ must vanish as well. Having then [recalling that $\frac{1}{i} = \frac{i}{i^2} = -i$]

$$\varphi = i\ell(\sqrt{(1-x^2)} - ix),$$

we will have

$$\varphi = \frac{1}{i} \ell(\sqrt{(1-x^2)} + ix)$$

or

$$\varphi = \frac{1}{i} \ell(y + ix)$$

[In our notation, because $y = iz$, $i^2 = -1$, and the unit circle has the equation

$$x^2 + y^2 = 1:$$

$$\varphi = i \ln(\sqrt{(1-y^2)} - iy)$$

$$= \frac{1}{i} \cdot i^2 \cdot \ln(x - iy)$$

$$= \frac{1}{i} \ln[(x - iy)^{-1}]$$

$$= \frac{1}{i} \ln(x + iy)$$

$$\text{since } (x - iy)^{-1} = \frac{1}{x - iy} \cdot \frac{x + iy}{x + iy} = \frac{x + iy}{x^2 + y^2} = x + iy.]$$

26. This equation we just found, expressing the relation between the arc φ and the sine and cosine, will also apply for all the other arcs which have the same sine, x , and cosine, y . Consequently, we will have [by the unit circle]

$$\varphi \pm 2n\pi = \frac{1}{i} \ell(y + ix)$$

and therefore

$$\ell(y + ix) = i(\varphi \pm 2n\pi),$$

$$[\ln(x + iy) = i(\varphi \pm 2n\pi)]$$

From this it is clear that the same number $y + ix$ corresponds to infinitely many logarithms, which are all included in this general formula $i(\varphi \pm 2n\pi)$, where in place of n we can put any whole number we wish. Since x is the sine and y is the cosine of the arc φ , let us set $x = \sin\varphi$ and $y = \cos\varphi$, and we will have this equality

$$\ell(\cos\varphi + i\sin\varphi) = i(\varphi \pm 2n\pi).$$

[Note: $z = \cos(\varphi) + i\sin(\varphi)$ is a complex number of modulus 1, meaning $|z| = 1$.]

27. From this equation, I will examine the principal cases which will furnish quite a clarification of this matter. So first let $\varphi = 0$, and we will have $\cos\varphi = 1$ and $\sin\varphi = 0$, and the equation we found [above in section 26] will give us

$$\ell 1 = \pm 2n\pi i.$$

Then, putting successively for n all the whole numbers, the logarithms of unity [1] will be

$$\ell 1 = 0, \pm 2\pi i, \pm 4\pi i, \pm 6\pi i, \pm 8\pi i, \dots, \text{ where}$$

we see that, though the logarithm of 1 is 0, like everybody knows it to be, there is also an infinity of imaginary expressions, each of which is as much the logarithm of unity [1] as 0 is.

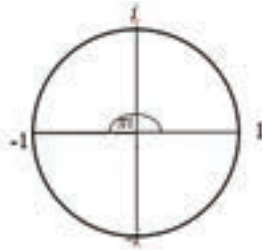
[We skip 28]

29. Now let the given arc φ be 180° , or $\varphi = \pi$, and we will have $\sin\varphi = 0$ and $\cos\varphi = -1$. This assumption made, the general equation found [$\ell(\cos\varphi + i\sin\varphi) = i(\varphi \pm 2n\pi)$ from section 26] will be changed into this form

$$\ell(-1) = (\pi \pm 2n\pi)i = (1 \pm 2n)\pi i,$$

from which we derive the entire infinity of logarithms of the negative number -1, for we will have

$$\ell(-1) = \pm \pi i, \pm 3\pi i, \pm 5\pi i, \pm 7\pi i, \dots,$$



[recall that πi can be reached by iterations of $\pi i + 2\pi n$ or $-\pi i - 2\pi n$] and from this we clearly see that all the logarithms of -1 are imaginary, and all different from the logarithms of $+1$ [by section 27, $\ell 1 = 0, \pm 2\pi i, \pm 4\pi i, \pm 6\pi i, \pm 8\pi i, \dots$, .] That notwithstanding, the logarithms of -1^2 , which will be

$$[\ell [(-1)^2] = 2\ell(-1) =] \pm 2\pi i, \pm 6\pi i, \pm 10\pi i, \dots,$$

are visibly contained in the logarithms of $+1$] which suffices to save us from the apparent contradictions which I made mention of above [in section 21], although it does not conversely follow that the halves of all the logarithms of $+1$ are logarithms of -1 , which the very nature of the quantities does not permit, since -1 is not the sole square root of $+1$ [$\sqrt{1} = \pm 1$].

30. We will now be easily assured that all the logarithms of all the negative numbers are imaginary. For let $-a$ be an arbitrary negative number, and α the logarithm of the positive number a [$\log a = \alpha$], found by the ordinary methods, so that $\ell(+a) = \alpha$, and because $\ell(-a) = \ell(a) + \ell(-1)$ we will have all the logarithms of the negative number $-a$ expressed as

$$\ell(-1) = \alpha \pm \pi i, \alpha \pm 3\pi i, \alpha \pm 5\pi i, \alpha \pm 7\pi i, \dots,$$

which are all imaginary.

By this, then, the question debated between Messrs. Leibnitz and Bernoulli, namely, whether the logarithms of negative numbers are real or imaginary, is decided in favor of the first [Leibnitz], who held them to be imaginary, and all the objections that M. Bernoulli has raised against this belief no longer have any hold on this verdict.

[We skip 31-32]

33. To get the logarithms of powers, we only have to follow the common rule and multiply the logarithm of the root by the exponent of the power. But since the root has an infinity of logarithms, we can add together as many different values as the exponent of the power contains units. In this way, since the logarithms of (-1) were found to be [in section 29]

$$\pm \pi i, \pm 3\pi i, \pm 5\pi i, \pm 7\pi i, \dots,$$

not only the doubles of these logarithms will give the logarithm of the square $(-1)^2$, but also the sums of two arbitrary ones, and by this means we will obtain all these formulas

$$0, \pm 2\pi i, \pm 4\pi i, \pm 6\pi i, \pm 8\pi i, \dots,$$

which are all the logarithms of $+1$. Furthermore, joining by threes the logarithms [recall section 21] of

$$\frac{-1 + \sqrt{(-3)}}{2} \quad \text{or} \quad \frac{-1 - \sqrt{(-3)}}{2}$$

we will likewise obtain all the logarithms of $+1$, since each of

$$\left[= \frac{(-1 + \sqrt{(-3)})^3}{2^3} = \frac{(-1)^3 + 3(-1)^2 i\sqrt{(-3)} + 3(-1)(i\sqrt{(-3)})^2 + (i\sqrt{(-3)})^3}{8} = \frac{8}{8} = 1 \right]$$

and

$$\left(\frac{-1 - \sqrt{(-3)}}{2} \right)^3$$

is equal to unity [1].

34. This facility for finding the logarithms of powers is also confirmed by the general formula of §26, for it has been proved [elsewhere] that

$$(\cos\varphi + i \sin\varphi)^\mu = \cos\mu\varphi + i \sin\mu\varphi,$$

so we have

$$\ell(\cos\varphi + i \sin\varphi)^\mu = \ell(\cos\mu\varphi + i \sin\mu\varphi)$$

This formula being similar to the first, we only have to put $\mu\varphi$ in place of φ in the logarithm, and since it is permitted to put $\varphi \pm 2n\pi$ for φ [by section 26], we will have

$$\ell(\cos \varphi + i \sin \varphi)^\mu = (\mu\varphi \pm 2\mu m\pi \pm 2n\pi)i,$$

and when the exponent is a fraction $\frac{\mu}{v}$ we will have

$$\ell(\cos \varphi + i \sin \varphi)^{\frac{\mu}{v}} = \frac{1}{v}(\mu\varphi \pm 2\mu m\pi \pm 2vn\pi)i,$$

the letters m and n indicating arbitrary whole numbers. Consequently, in the case $\varphi = 0$ and $\varphi = \pi$, we will have

$$\ell[1^{\frac{\mu}{v}}] = \frac{1}{v}(\pm 2\mu m \pm 2vn) \pi i$$

and

$$\ell[(-1)^{\frac{\mu}{v}}] = \frac{1}{v}(\mu \pm 2\mu m \pm 2vn) \pi i$$

And having taken account of this situation, all the difficulties which might be encountered in this matter will disappear entirely, and the doctrine of the logarithms will be safeguarded from all attacks.

As one can see, there are many points at which Euler keeps reasoning with logic and mathematics even when a contradiction or paradox arises. This is the sign of a credible mathematician because he follows the “story” and does not get scared off when the “story” is not clear. This is an uncommon trait nowadays in students where, if a problem/proof starts to go awry, they start to panic when not getting the desired conclusion [a correct answer]; however, Euler shows us that this situation is acceptable as long as your work is supporting your argument. He also admits when his attempt at proofs do not match what must happen in order for a statement to be true. One can see this in many sections starting with Proposition 7 when he ends with, “But I will nevertheless show that this conclusion we want to draw is not sufficiently certain” (Doucet 4).

From the start of the paper, the reader can see that Euler will be drawing some conclusions that may not be mathematically sound and deduce contradictions. Euler is thinking his way through the story, which is an important

part of mathematics because no one just sees a proof all at once. In addition, this makes it easier for the reader to follow along and understand why Euler is proving the material in a certain way. Euler's method of analysis allowed him to discover and see what *cannot* be instead of what *can* be many times. This process of elimination allowed him to use that knowledge of what cannot be to disprove future propositions. In Proposition 18, a section we omitted, he writes, "These difficulties will seem so strong, and even so replete with contradictions, that we will be at pain to understand how it would be possible to extricate ourselves from this matter" (Doucet 9). This quote shows how using paradoxical mathematics is hard ; it is a different type of difficult. Then later on in Proposition 21, he writes, "For a long time these difficulties tormented me, and I was under several illusions concerning this matter" ending the section with, "This explanation seemed to me extremely paradoxical indeed and unsustainable" (Doucet 10,11). Euler stating that he found a paradox with sound work shows students that outside-the-box thinking can get you further than inside-the-box-thinking. It also shows that even a brilliant mathematician has immense struggles at points, especially when the work shows what is not expected and/or desired.

Nevertheless, mathematics is often taught in a much different way. Students are often punished when they make a mistake or think outside the box. They are taught to memorize procedures and techniques. This method of approach does not encourage the type of thinking that Euler did, and is the reason why he was such a successful mathematician. Euler took risks, was not afraid to get stumped and then admit it, in stark contrast to how a majority of students approach mathematics today.

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Thermal Constraints on Exoplanet Habitability

By Gregory R. Troiani

Since time immemorial, humanity has wondered if we are truly alone in the universe. As our understanding of science illuminates more of the universe, we become more confident that the stars in our sky are not fundamentally different from what we find here on Earth. We can reasonably conclude that, with nothing special to distinguish our little world from every other place in the universe, finding life is not a matter of whether or not it exists, but rather a numbers game and refining the question of where to look.

To date, there are 4,329 confirmed planet detections in 3,199 star systems (*The Extrasolar Planet Encyclopaedia*). The two primary methods used to detect exoplanets are observation of periodic decrements in stellar luminosity and observation of periodic changes in the radial velocity of the star, via the Doppler shift. Unfortunately, these two methods exhibit a strong selection bias toward planets that are massive, gaseous, and close to their host star because they tend to produce the largest changes in stellar luminosity and host star radial velocity. In spite of this selection bias, several dozen low-mass terrestrial planets have been detected.

Among those planets, determining which ones certainly cannot support life poses a particular conundrum. We are forced to conclude by the mediocrity principle that there is nothing particularly special about our own small planet, Earth. Yet, because of our singular sample size of environments that are known to be capable of supporting life, we must assume that the various parameters that make Earth habitable, such as mass, surface temperature, atmospheric content, and density, are in fact ideal. This conflict is outside the scope of the research conducted here; this conundrum aside, we propose that the ability of a planet to maintain an atmosphere and stable bodies of liquid water over evolutionary timescales is a reasonable constraint on habitability given our limited knowledge about the variety of forms that life may take. Therefore, we will accept it as axiomatic for our purposes. While this axiomatic constraint will not reveal the narrow subset of planets that can support human life, it does allow for determination of the broader

set of planets that could potentially evolve life that is dependent on water. Because the temperatures and pressures at which liquid water can exist are well known from laboratory experiments here on Earth, a thermodynamic approach can be used to construct a model of planetary habitability. We examine how measurable and hypothetically measurable physical quantities associated with planets affect these two thermodynamic variables on proposed planetary surfaces.

Background and Analysis

Habitable Zone

A simple model to determine planetary habitability disregards atmospheric pressure entirely, and it models both star and planet as spherical blackbodies, such that the Stefan-Boltzmann Law of thermal radiation applies. The analysis here starts with this as a general model and expands from there. The Stefan-Boltzmann law (Serway & Jewett, 613) is given as:

$$P = \sigma eAT^4 \quad (1)$$

where P is power output, σ is a constant of proportionality, e is emissivity, a dimensionless number between 0 and 1 that describes how absorptive and emissive an object is, A is the surface area of the object, and T is the temperature of the object in Kelvin. Equation (1) is for a single-body system. If it is assumed that the planet is in thermal equilibrium, meaning it radiates exactly as much energy as it absorbs, then the following is true,

$$P_{\text{in}} = P_{\text{out}} \quad (2)$$

where P_{in} is the energy per unit time absorbed by the planet from the star, P_{out} is energy per unit time emitted as thermal radiation by the planet. P_{out} can be determined simply by applying Stefan's law where A is the surface area of the planet, modeled as a sphere, i.e. $A_{\text{planet}} = 4\pi R_{\text{planet}}^2$. P_{in} is slightly more complicated, as the planet only absorbs a small fraction of the thermal radiation that the star emits. To determine P_{in} , first divide the output of the star by the surface area of the imaginary sphere over which its radiation is spread at d , the distance between the planet and star, i.e. $\frac{P_{\text{star}}}{4\pi d^2}$. This expression is the power per unit surface area at the distance of the planet. In order to get the amount of energy that actually is absorbed by the planet, this value must be multiplied by the cross-sectional area of the planet, πR_{planet}^2 , as well as the efficiency at which the planet absorbs incident energy, e_{planet} . Applying this to Equation (2) yields the following expression.

$$(e_{\text{planet}} \pi R_{\text{planet}}^2) \frac{\sigma e_{\text{star}} (4\pi R_{\text{star}}^2) T_{\text{star}}^4}{(4\pi d^2)} = \sigma e_{\text{planet}} (4\pi R_{\text{planet}}^2) T_{\text{planet}}^4 \quad (3)$$

For the purposes of defining habitable radii, the variable of interest in Equation (3) is d , the distance between the planet and star. Stars are often modeled as perfect blackbodies, hence for the purposes of calculating the effective stellar temperature T_{star} , the emissivity e_{star} is 1 by definition. Applying this simplification and solving Equation (3) for d yields the following.

$$d = \frac{1}{2} \left(\frac{T_{\text{star}}}{T_{\text{planet}}} \right)^2 R_{\text{star}} \quad (4)$$

Stellar temperature, radius, and mass are all inextricably linked and can be determined easily by the color index of the star (Germany). Thus, the range of habitable radii for a given star can be determined by varying T_{planet} across the range of temperatures at which liquid water is stable. When Equation (4) is applied to the parameters of the Earth-Sun system, it yields a distance of 1.401×10^8 km, only slightly less than Earth's actual orbital distance of 1.496×10^8 km or 1 astronomical unit (1 AU), which supports its first-order accuracy despite its simplicity. This model, naturally, leaves out a great deal. Namely, it assumes a perfectly circular orbit, disregards greenhouse effects and surface pressure, disregards internal heat sources, and assumes that the star's radiative output is stable over time. These complications will be explored in greater detail in subsequent sections.

Stellar Spectral Classification

The way in which stellar temperature and stellar radius scale is described by the Hertzsprung-Russell (H-R) diagram, shown below in Figure 1. The temperature axis, for historical reasons, is classified in order from hottest to coolest as OBAFGKM. A number from zero to nine typically follows the letter to allow for greater delineation of subtypes, with higher numbers denoting cooler temperatures. For reference, the Sun is a G2-type star along the Main Sequence. Giants and supergiants are bright phases of stars in the last stages of their lives, and white dwarves are non-reactive remnants of dead stars; neither are stable environments for life. The broad diagonal line, the Main Sequence, contains the stable stars with which we are concerned ("Educational Materials"). The position on the H-R diagram of a given star can be determined using two optical

wavelength observations (the B-V color index, analogous to temperature) and is a relatively simple matter compared to the difficulty of detecting an extrasolar planet. Therefore, the type of star that a given planet is orbiting can be assumed to be well known in all cases concerning exoplanet habitability.

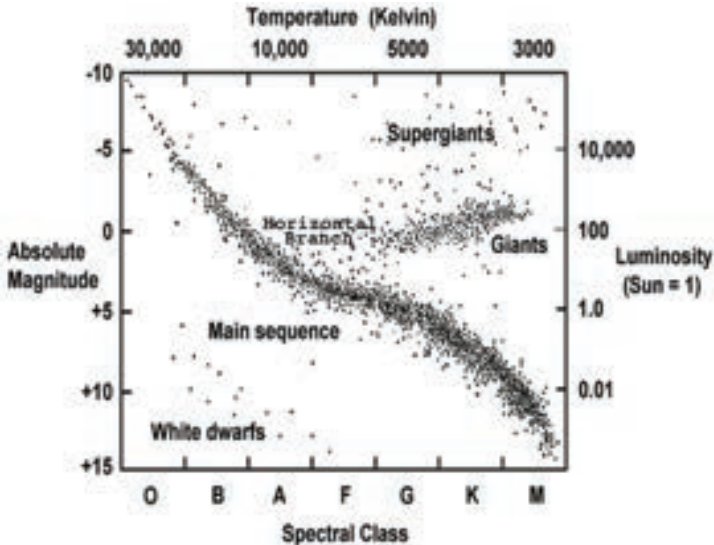


Figure 1: An H-R Diagram in units of temperature and radiative output compared to the Sun (“Educational Materials”).

Not depicted on the above H-R diagram, but very much dependent on it, is the lifetime of the star. Hot, massive stars in the upper left corner of the H-R diagram burn through their hydrogen fuel very quickly, emitting huge amounts of radiation for a short few million years before exploding violently. Relatively cool stars in the lower right corner, on the other hand, burn dimly and for extremely long periods of time. The lifetime and temperature stability of a star is thus a constraint on the ability of life to develop on the planets around it.

The oldest direct evidence of life on Earth are microfossils dating to approximately 3.5 billion years ago (Schopf et al., 53). The current best estimate for the formation of Earth is 4.54 billion years ago (Newman). Assuming that this is a standard timeline for the development of life, again acknowledging the small sample size and therefore the naiveté of the assumption, the types of stars around

which life may develop can be constrained to those that have a main-sequence lifetime of greater than 1 billion years. Using the following equation (Nave),

$$\tau \approx 10^{10} \left(\frac{M}{M_{\odot}} \right)^{-2.5} \text{ yrs} \quad (6)$$

where τ is the lifetime of the star, M is the mass of the star, and M_{\odot} is the mass of the Sun, it can be calculated that any star with mass greater than approximately $2.5 M_{\odot}$ will become a red giant before even simple life can gain a foothold on the planet.

This upper limit on stellar mass becomes even smaller when the analysis includes how stars evolve with time. As stars progress through their main-sequence lifetimes, they increase in luminosity and surface temperature. So, while a given planet may reside comfortably within the habitable zone near the beginning of the lifetime of a star system, as the star heats up and the habitable zone moves outward, the planet may find itself no longer within the habitable zone despite the lack of change in its orbit. A new distance must therefore be defined: the continuously habitable zone, within which water is stable for a requisite period of time. In 1993, Kasting, et al. did extensive habitable zone calculations, using atmospheric assumptions that will be discussed later, and found that a conservative estimate for a high-end limit for which the continuously habitable zone was stable for the requisite amount of time was spectral type F0 (108), corresponding to an upper mass limit of approximately $1.6 M_{\odot}$ (Morgan).

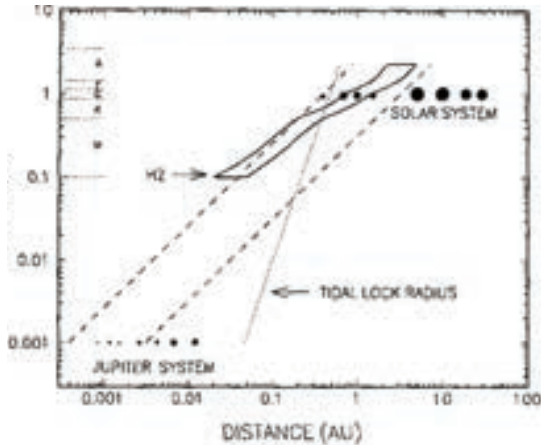


Figure 2. Distance from the host star in AU plotted against the mass of the host star in solar masses. The habitable zones, locations of planets in our solar system and of the moons of the Jupiter system, and the tidal locking radius are shown (Kasting, et al., 124).

Likewise, there exist lower limits on stellar mass. Low mass stars are relatively dim, so their habitable zones, while stable in time, are close enough that tidal forces become significant enough to lock the planet into geosynchronous rotation, a process known as tidal locking, early in its lifetime. A tidally-locked planet is one where the orbital period is equivalent to the period of rotation, i.e., the day and the year are the same length, and so the planet permanently presents one hemisphere to the star. The radius within which tidal locking will occur is denoted on Figure 2 as the Tidal Lock Radius. A tidally-locked planet will, over time, lose its water and other volatiles to glaciation in the dark hemisphere (Kasting, et al., 124). In addition, M-type stars, the lowest mass stellar spectral type capable of fusing hydrogen, exhibit substantial flare activity and coronal mass ejections. Proximity to intense stellar activity may be a significant impediment to the development of life. While these factors do not necessarily preclude the formation of life, they do provide substantial obstacles thereof and so may be considered sufficient to draw another constraint. All things considered, this allows for the use of Figure 2 to conclude that there exists a soft lower stellar mass limit of habitability at roughly $0.7 M_{\odot}$, at

which there is no portion of the habitable zone within the tidal lock radius. This mass corresponds to a spectral type K2 star (Kasting, et al., 124; Morgan).

Orbital Eccentricity

Eccentricity, as a geometric term, describes the oblong nature of an ellipse. Similarly, orbital eccentricity refers to the length of the ellipse that a planetary orbit traces out. Low eccentricity, close to zero, describes a nearly circular orbit, while eccentricities between zero and one describe elliptic orbits of increasing difference between the size of their major and minor axes. Eccentricities equal to or greater than one describe open orbits (parabolic and hyperbolic, respectively) and will not be considered in this analysis, since such orbits describe unbound planets interacting briefly with a star. Because stellar output is spherically symmetric, the habitable zone can be thought of as a spherical shell. We can therefore reasonably assume that a highly eccentric orbit may take a planet outside of the habitable zone for a significant fraction of its orbital period, and therefore there exists some upper bound on acceptable orbital eccentricity.

Earth-like planets with middling orbital eccentricity experience sharp decreases in habitability due to a particular feedback loop referred to as a “snowball transition” by Dressing et al. in their 2010 paper (2). Freezing during the long and distant portion of an orbit increases albedo due to the development of highly reflective snow cover. Therefore, the ability to absorb heat during the comparatively brief period in which the planet is closer to the local star is reduced. While this seems to back up intuition, it is important to note that some habitability was found in their model out to eccentricities of 0.9 for certain planetary parameters, most notably for those planets with large ocean coverage due to the high thermal inertia of water. In addition, there was a general trend that higher eccentricity orbits allowed for more distant outer limits of the habitable zone (Dressing, et al., 6). This forces us to conclude that, while middling and high eccentricities do decrease habitability, this is by no means exclusionary, so no hard constraint can be drawn. Additionally, planets with moderately eccentric orbits may exist comfortably around stars below the lower mass boundary described above, and a previously frozen planet could thaw and become partially habitable should a gravitational perturbation introduce eccentricity to its orbit—bringing part of the orbit within the habitability zone. Despite these exceptions, we can reasonably argue that lower orbital eccentricity is preferable, but not necessary, for the stability of water and therefore the development of life.

Atmospheric Composition

Atmospheric composition is by far the most complicated factor in this analysis. A planetary atmosphere can have continuous and limitless combinations of partial and total pressures of various substances, each with varying greenhouse effects. Therefore, this discussion can by no means be considered comprehensive. However, a few simplifying assumptions can be made, and a few constraints can be established provided that the assumptions hold. If a single-component (for example, N_2) atmosphere with a negligible greenhouse effect is assumed, then the simple model given by Equation (4) holds, and the atmosphere serves only to provide a containing pressure on bodies of liquid water.

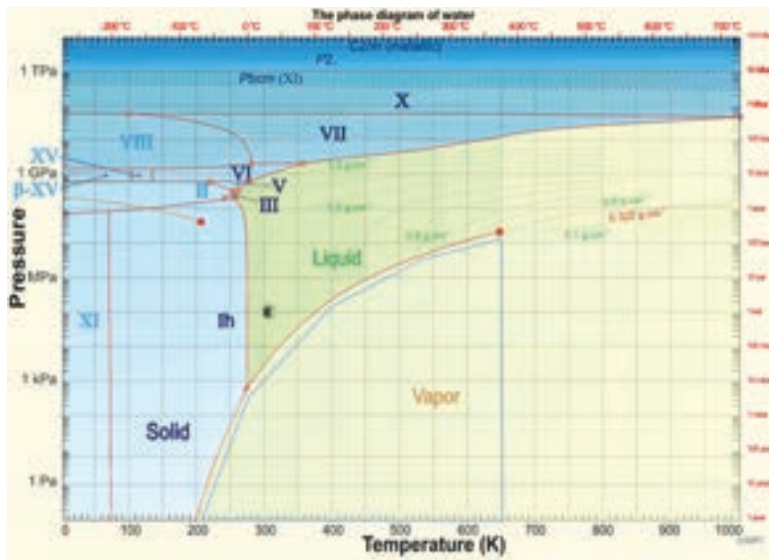


Figure 3: The phase diagram of water, with temperature plotted against pressure, and the respective phases labeled and color-coded (Greenside).

Figure 3 can therefore be used to determine an absolute minimum atmospheric pressure at which a planet may be considered habitable by looking at the range of temperatures and pressures at which liquid water can exist. The minimum corresponds to the pressure at the triple point of water, 611 Pa (Serway & Jewett, 572). Given that the habitable radius at this atmospheric pressure would have zero width, as the temperature range for liquid water is infinitesimal, this is of

course an idealization and could never actually occur. Nevertheless, it does provide a lower limit to atmospheric pressures, with atmospheres thinner than this limit being physically incapable of hosting stable liquid water and therefore life.

The above phase diagram also gives additional insight into the range of possibilities for the development of life on other planets. The physical size of the habitable zone corresponds to the range of temperatures in which liquid water may be stable, and that temperature range is substantially wider (mostly extending to higher temperatures) as pressure increases. Therefore, planets with high atmospheric pressures may actually be better for the development of life than those with atmospheric pressures comparable to Earth, as they can exist at a wider range of distances, specifically distances closer to the parent star.

Kasting et al. did an in-depth analysis which considered variable partial and total pressures of an N_2 atmosphere with a CO_2 and H_2O greenhouse components, which included considerations of how the temperature and partial pressures varied with altitude in the atmosphere. These variabilities were modeled on an Earth-mass exoplanet around a Sun-type star at a variety of distances. This model will be used here to discuss the inner and outer limits of the habitable zone. Because the habitable radius is relatively independent of planetary size, the distance boundaries of habitability determined here can be modulated to a different type of star by applying their respective temperature and radii to the simple model in Equation (4).

The outer limit of habitability was determined in two ways and is thus likely to lie between the two for comparable atmospheres. The first was determined by varying CO_2 partial pressures and determining the maximum distance at which a greenhouse effect could maintain a temperature above the freezing point of water, 273 K. This procedure yielded an outer bound value of 1.67 AU. The second was found by determining the minimum CO_2 partial pressure and the distance at which condensation into CO_2 clouds occurs (and thus an increase in albedo, countering the greenhouse effect). This procedure yielded an outer bound of 1.37 AU. (Kasting et al., 111)

The inner limit of habitability was determined in three ways. Most simply, it can be estimated empirically by noting from Magellan (a spacecraft that performed orbital radar mapping of the Venusian surface) observations that no liquid water has flowed on Venus for at least the last billion years, and considering solar evolution to determine that the current inner edge must be at least 0.75 AU. The other two ways depend on varying the temperature on the previously described climate model between its present temperature of 288 K and the critical

temperature of water of 647 K. The first limit was determined by noting the distance at which the stratosphere becomes wet and water loss to space becomes significant. This occurs at 0.95 AU. The second limit was determined by noting the distance at which the oceans are entirely vaporized, which occurs at 0.85 AU. (Kasting et al. III)

While the various methods of determining limits do produce varying distances, it is reasonable to assume that destabilizing effects will begin to significantly reduce habitability at the most conservative extrema. From this, it can be concluded that the most sensible estimate for the habitable zone for a Sun-like star and an Earth-like atmosphere is from 0.95 AU to 1.37 AU (Kasting et al., 125).

While small rocky planets such as Earth are not massive enough to hold on to atmospheric H_2 , a more massive rocky planet would be able to do so. In the 2013 paper “Exoplanet Habitability,” Sara Seager notes this as a major possible extension to the range of habitable radii that is not considered in the conventional Earth-like atmospheric approach above. H_2 is a powerful greenhouse gas across a broad range of wavelengths, and, at high partial pressures, would be able to maintain temperatures and pressures suitable for liquid water out to distances of 10 AU (Seager, 579), which is slightly beyond the orbit of Saturn in our own solar system. Likewise, a planet with a significant albedo (i.e., the planet’s surface is composed of a more reflective material than Earth) and a minimal greenhouse effect could feasibly exist within the inner limit of habitability—since the majority of energy from the star would be reflected back into space. As such, while 0.95 AU to 1.37 AU constitutes a reasonable range of habitability for planets with Earth-like atmospheres, it is important to note that variations in atmospheric and surface composition can extend this range considerably in both directions.

Planetary Mass

While the habitable zone of a star is roughly independent of the corresponding planet’s mass and size, the mass of the planet does determine a number of factors that are relevant to habitability. As described above, a larger planet allows for the maintenance of a thicker atmosphere. Given that higher pressure atmospheres are likely more conducive to life, more massive planets may likewise be more conducive to life. There are also geochemical carbon cycles that stabilize CO_2 levels that rely on plate tectonics (Kasting et al., 118). In order to maintain sufficient geologic activity to sustain plate tectonics, the internal structure of the planet must retain sufficient heat to drive convective currents in the partially liquefied mantle. In addition, a global dipole magnetic field is, based on our small sample,

necessary to reduce the impact of the ionizing charged particles that emanate from the host star (i.e., the stellar wind). While the stellar wind is not necessarily directly harmful to life or to a planetary atmosphere, in the case of our biosphere, it can cause the destruction of the layer of ozone which protects the rest of the atmosphere from harmful ultraviolet radiation (Schiermeier). Photodissociation of atmospheric molecules by UV photons is a major driver of atmospheric loss to space (Maltagliati); therefore, a global magnetic field is beneficial, at least in our case, to preserving an atmosphere. According to Stevenson in the 2001 paper “Mars’ Core and Magnetism,” the same convective processes that drive plate tectonics also drive the geodynamo responsible for a global magnetic field (217). As Mars is currently geologically dead and seemingly inhospitable, Mars’ mass may be considered a tentative lower bound on planetary mass (Kasting et al., 117-118).

Conclusion

When the presence of stable bodies of liquid surface water is equated with exoplanet habitability, a number of constraints can be drawn about the conditions under which such planets might exist. While hard and definitive constraints are difficult to determine, as they rely on assumptions that may not necessarily be true, it seems that from these softer constraints, we can predict the best places to look for planets that may harbor life. These constraints include orbiting a star with a mass of $0.7 - 1.6 M_{\odot}$, at a distance of $0.95 - 1.37$ AU when normalized to the parameters of a G2 Sun-like star (closer for lower mass stars and more distant for higher mass stars), with a high pressure atmosphere, a modest greenhouse effect and a mass definitively greater than Mars, and preferably greater than that of Earth.

With available surveys, all stellar and orbital parameters can be determined, that is, everything except for those describing atmosphere and surface composition. Unfortunately, the atmospheric composition and albedo are by far the most important variables for determining habitability, and the range of possible atmospheric compositions has been only marginally explored. Therefore, without more powerful spectroscopic and imaging tools, it is impossible to say with certainty whether or not a planet is likely to be habitable or even to do a proper demographic study of extrasolar planetary properties. This lack of available information sheds light on something that has been alluded to multiple times throughout this paper: as physically realistic as we attempt to make our models, we cannot help but speculate due to our intrinsically limited sample of hospitable environments. Any rule we make here is bound to have exceptions and will be inherently skewed towards preferring

planets that are at least principally similar to Earth. Given the relative abundance of hydrogen in the universe, it is a distinct possibility that hydrogen atmosphere-habitable extrasolar planets as described by Seager may be more common, and Earth is in fact the exception to the rule. Likewise, small icy worlds with subsurface oceans such as those popularly hypothesized on Europa and Enceladus may be the most common repositories of life in the universe. Only more powerful survey missions and, ultimately, exploration will be able to tell.

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Anna Ryan is pursuing a degree in communication studies with an emphasis in journalism and mass communication along with a minor in Spanish. Currently, she is working to refine her journalistic writing skills so she can pursue a career in the communications and marketing field. She wants to spend her future spreading the hope of the gospel of Jesus Christ and investing God's Word into the lives of others. Ryan wrote her paper for Honors Discourse 200 taught by Dr. Henrietta Rix Wood, and she would like to thank Dr. Wood for her expertise and discernment in all steps of the writing composition.

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