

THESIS

A CONFLUENCE OF BODIES: DRAWING PARALLELS BETWEEN THE COMMODIFICATION OF HUMAN AND MORE-THAN-HUMAN BODIES AS A TOOL FOR THE ANALYSIS OF SEX TRAFFICKING AND ANTHROPOGENIC ENVIRONMENTAL EXPLOITATION

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ABSTRACT

A CONFLUENCE OF BODIES: DRAWING PARALLELS BETWEEN THE COMMODIFICATION OF HUMAN AND MORE-THAN-HUMAN BODIES AS A TOOL FOR THE ANALYSIS OF SEX TRAFFICKING AND ANTHROPOGENIC ENVIRONMENTAL EXPLOITATION

The Anthropocene is characterized by human-driven change. In this age, humans proliferate and we are closer than ever before to one another and other species. Despite, or perhaps because of this propinquity, humans increasingly commodify bodies: humans, more-than-humans, and Earth itself. As a survivor, I observe parallels between the commodification of human bodies via sex trafficking and more-than-human bodies through environmental exploitation. I argue that these forms of commodification are mirror images originating from a common ancestor: man. This commodification remains visible at the site of the body: my own, the Earth's and more-than-human species. The way in which the body appears, speaks, and behaves testify to this visibility. Therefore, the body, in its multitude of forms, is a site at which the trauma of commodification haunts, a place that remembers, and the subject of my artwork.

To support these assertions, I define forms of commodification of human bodies via sex trafficking and more-than-human bodies via environmental exploitation, illustrating likenesses between the two. Next, I describe the resultant symptomatology and apply a transdisciplinary economic, anthropological, and biomedical framework to explain these effects. Vitrally, I also explore how these connections are visible in the subject matter and materiality of my artwork. I argue that the use of textiles, natural dyes, ecoprinting, and the incorporation of natural and synthetic materials are iterative processes of making kin, building ecosystems, and establishing connections among similarly commodified forms. Lastly, I trace paths forward, strategies that involve overcoming the uncanny and abject body through intentional re-visiting of the past and making kin. I propose that by creating literal and figurative spaces

for care of self and more-than-self, healing is possible. Ultimately, I demonstrate that staying with trouble in the company of similarly commodified entities allows one to safely remake and reimagine.

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A CUCKOO IN THE NEST

A cuckoo in the nest: *Idiom*, An unwelcome intruder, phrase derived from the reproductive strategies of cuckoo species which include brood parasitism.

Introduction

The geologic epoch of the Anthropocene is defined and characterized by human-driven change. We are the dominant force shaping the Earth. In this modern age, humans proliferate and, as such, we are closer than ever before to one another and to other species. Despite, or perhaps because of, our propinquity with humans and more-than-humans, we continue to commodify nature, other species, and other human beings, resulting in a plethora of harmful effects. I see the Earth and its inhabitants ravaged by man and feel a deep, shredding, abhorrent pit inside of me because I too know what it is to be raped, bought, and sold. I am a survivor of sexual assault and sex trafficking, but I'm also an artist, wildlife biologist, researcher, and advocate. As I observe, learn, and make, I've come to view the commodification of the Earth and that of the human body via sex trafficking as repetitive mirror images. This land and its more-than-human inhabitants are my kin. I revisit our pasts, my own and the Earth's, repeatedly in my mind, going back to a place of proximity to death. It is at once immediate and removed from consciousness, difficult to comprehend. Therefore, there is an innate need to discern, depict, and describe, both visually and linguistically, the experience, traumatic memories, and paths forward.

Commodification via sex trafficking and anthropogenic environmental exploitation are clonal, mirror images originating from a single common ancestor: man. This commodification remains visible at the site of the body, my own, the Earth's and more-than-human species. The way in which the body appears, speaks, and behaves testify to this visibility. Therefore, the body, in its multitude of forms, is a site at which the trauma of commodification haunts, a place that remembers. In order to support these assertions, this thesis is broken into four sections. The first explores the subject matter of my artwork, objectively and subjectively analyzing the imagery, drawing on writings by Anna Tsing, Nicolas Bourriaud, Sladja Blazan, and Jacques Lacan. In order to justify the inclusion of myriad species and

entities in this subject matter, comparisons are made between the commodification of human bodies through sex trafficking and commodification of the environment and more-than-human species via anthropogenic exploitation, with categories and definitions being established for each subset of commodification.

Subsequently, in Section II, I specifically address the materiality of my work and its inherent connection to subject matter. Applying frameworks used by Donna Haraway and Anna Tsing, I argue that the use of textiles, natural dyes, ecoprinting, and the incorporation of both natural and synthetic materials are iterative processes of making kin, building ecosystems, and establishing connections among similarly commodified forms. By observing how these materials behave in my work and in the world, I enhance my understanding of the effects of commodification, in both humans and more-than-humans. These effects are presented in this section as the symptomatologies of commodification. I explore the behavioral and health effects observed in commodified humans and more-than-humans.

Next, in Section III, in an attempt to explain why these effects are observed, I apply an economic, anthropological, and biomedical framework to commodification. This research serves to better understand both myself and the materials and more-than-human species with whom I collaborate. Additionally, this understanding provides opportunities for finding paths forward in Section IV. In this final section, I trace my path toward care of self by examining how I cope with experiencing the body as uncanny and something to be abjected, using notions of allowing the body to re-remember and re-visit the past intentionally and safely. Drawing on the work of Alexandra Kokoli, Bessel van der Kolk, Ernst Jentsch, Jacques Lacan, Judith Lewis Herman, Julia Kristeva, Masashiro Mori, and Sigmund Freud, I explain this process. I argue that by making kin as well as literal and figurative spaces in which to allow bodies to remember, care for self and more-than-self is possible. Utilizing the work of Julia Hobart and Tamara Kneese, Donna Haraway, and Jacqueline Millner and Gretchen Coombs to explain ideas of radical care, I demonstrate that staying with trouble in the company of similarly commodified entities allows one to safely remake and reimagine.

Visual Subject Matter

The following section attempts to explicate how the body in my work functions as a site at which the trauma of commodification becomes visible in humans, more-than-humans, and the Earth itself. In doing so, it also becomes evident that the commodification of the body via sex trafficking and more-than-human species via anthropogenic environmental exploitation are mirror images, derived from the same progenitor. It is therefore first necessary to examine the content of my images. Objectively, my drawings appear to feature female bodies, usually nude, entangled in conglomerates of more-than-human species including birds, mollusks, insects, arthropods, plants, and fungi. For example, in *Carya glabra* (Fig. 1), a woman's nude torso is visible in a slightly reclined position. Out of her right shoulder grow common morel mushrooms (*Morchella esculenta*) while on her left side, a pair of mating banded hairstreaks (*Satyrrium calanus*) have landed. There are openings in her skin, revealing layers of sinew and darkness. At one of these openings on her left hand, a blue jay (*Cyanocitta cristata*) pecks. Across her belly, a mating pair of painted hickory borer beetles (*Megacyllene caryae*) crawl and at her right breast, a red-bellied woodpecker (*Melanerpes carolinus*) appears to probe a perforated part of skin. Similarly, in *Prunus pensylvanica* (Fig. 2), a young nude woman appears upside down with her head resting on the ground while her feet appear seemingly propped up on something beyond the frame. The background is splashed with pink and orange coloring. Shelf fungus grows out of openings in her torso as a cecropia moth caterpillar (*Hyalophora cecropia*) crawls along her inner thigh. In the bottom left side of the frame, a wild turkey (*Meleagris gallopavo*) forages at the woman's right arm and in the bottom right corner, a hummingbird clearwing moth (*Hemaris thysbe*) hovers with proboscis inserted into an opening in the woman's left arm. Above a larger perforation on the woman's right thigh, a cedar waxwing (*Bombycilla cedrorum*) faces downward, staring at the girl.



Fig. 1. Katie Simmons, *Carya glabra*, 2023, Ballpoint pen and homemade natural dye made from pignut hickory (*Carya glabra*) bark on watercolor paper, 22 x 30".

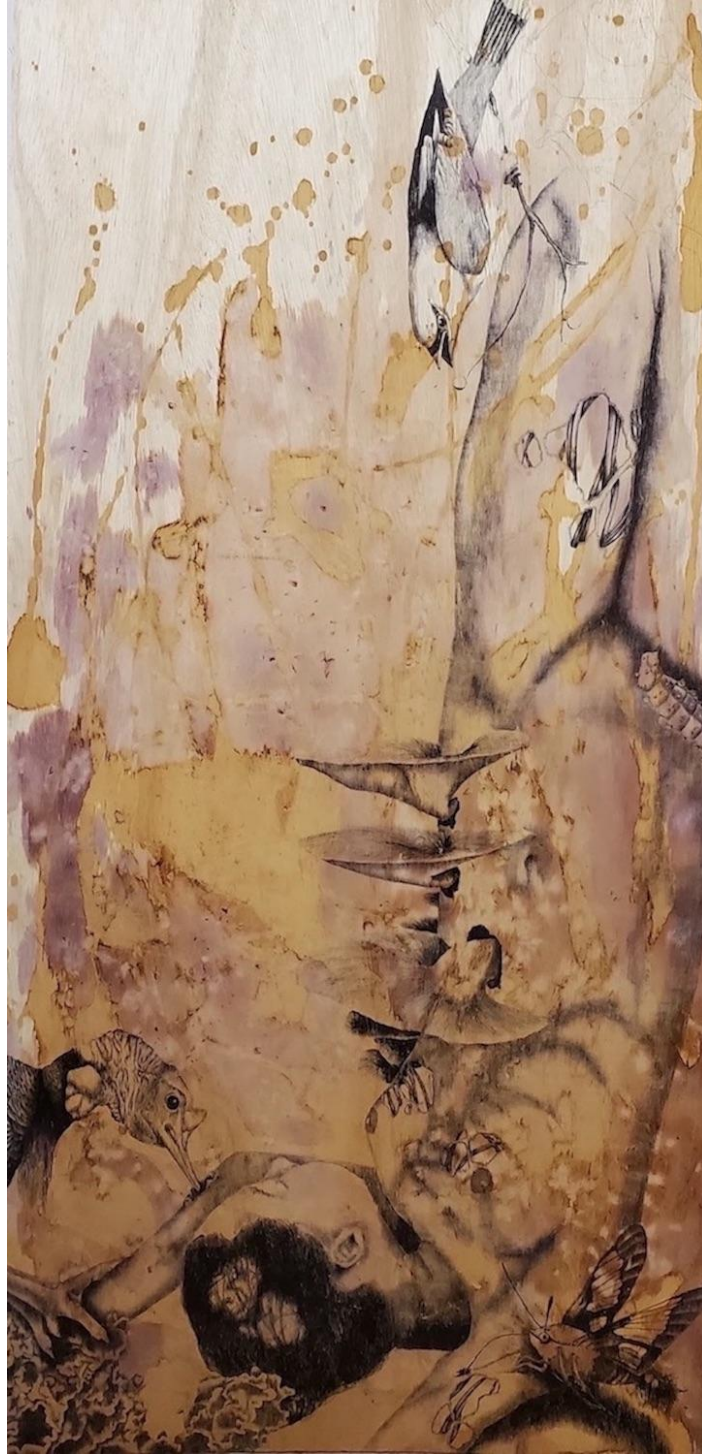


Fig. 2. Katie Simmons, *Prunus pensylvanica*, 2023, Ballpoint pen and homemade natural dye made from sandstone and pin cherry (*Prunus pensylvanica*) fruit on balsa wood, 60 x 22".

While objectively, these drawings appear lovely, featuring beautiful animals and delicate marks, a more subjective analysis allows one to understand how the body functions as a site at which the trauma of commodification becomes visible in humans, more-than-humans, and the Earth itself. A variety of visual cues suggest that something has happened and continues to happen to these bodies. For example, in *Picea pungens* (Fig. 3) openings on the body abound, revealing non-anatomically correct, unknown, enigmatic spaces. These abscissions and perforations reveal that *something* has happened to the body. It is not natural or expected and the body may not be completely alive. As scholar and author Sladja Blažan explains in her book *Haunted Nature: Entanglements of the Human and the Nonhuman*, there is an “unrelentless awareness that things will never be the same again.”¹ Pervasive and subtle horror is intimated. In Figure 3, an American three-toed woodpecker (*Picoides dorsalis*) pecks at the figure’s flesh while purple chanterelle fungus (*Polyozellus multiplex*) grows from her shoulder and thigh. The inclusion of fungus, a decomposer, further references decay, regeneration, and the cyclical flow of nutrients. The body cannot be completely living if a decomposer is transforming it into something else. Other animals gather around and on the body, including a spruce grouse (*Canachites canadensis*) and a white pine weevil (*Pissodes strobi*), further suggesting a return of the body to nature.

¹ Sladja Blažan, *Haunted Nature: Entanglements of the Human and the Nonhuman* (Palgrave Macmillan, 2021), 2.



Fig. 3. Katie Simmons, *Picea pungens*, 2023, Ballpoint pen and homemade natural dye made from blue spruce (*Picea pungens*) needles on watercolor paper, 22 x 30".

Similarly, in *Fucus vesiculosus* (Fig. 4) a woman's body appears floating with arms and legs above her head and fissures breaking apart her form. Again, it is clear that this figure has undergone something as she appears not quite living and, perhaps, underwater. From a large opening on her left breast grow gooseneck barnacles (*Pollicipes polymerus*) while a black oystercatcher (*Haematopus bachmani*) pries at these while standing on her back. Through wound-like openings in her arms and feet stream feather boa seaweed (*Egregia menziesii*) and on her back upper thighs grow little brown barnacles (*Chthamalus dalli*). On her back right thigh, a rockweed isopod (*Pentidotea wosnesenskii*) creeps upwards and on her back, a clutch of snowy plover (*Anarhynchus nivosus*) eggs are nestled.



Fig. 4. Katie Simmons, *Fucus vesiculosus*, Ballpoint pen and homemade natural dye made from bladderwrack seaweed (*Fucus vesiculosus*) on watercolor paper, 22 x 30".

Likewise, in *Vaccinium angustifolium* (Fig 5.1-5.2), multiple bodies tumble down a swath of silk dyed with wild blueberries (*Vaccinium angustifolium*). Out of the bodies sprout common morels (*Morchella esculenta*) and chicken of the woods (*Laetiporus sulphureus*) while hair, feathers, tendons, and spilled dye flows in, out, and through fissures in the bodies. It is apparent, simply by the presence of these more-than-human species, that the body is returning to the environment following some event. As Blažan explains, “nonhuman sentience intersecting with humans is often represented in terms of haunting.”² This intersection is at work in these drawings; however, it is not the case that Nature represents the ominous or bleak. Instead, other-than-human species remind the human of the repetitive,

² Blažan, *Haunted Nature*, 2.

relentless commodification by man of which they are all collective survivors/victims. The human and the more-than-human are together; Nature is haunted by humans and Nature haunts humans.³ As anthropologist Anna Tsing explains in her *Field Guide to the Patchy Anthropocene*, human suffering is wrapped up with nonhumans.⁴ And, while what has happened to the body is unclear and perhaps unthinkable, it is obvious that there has been some rupture from “normal” life.

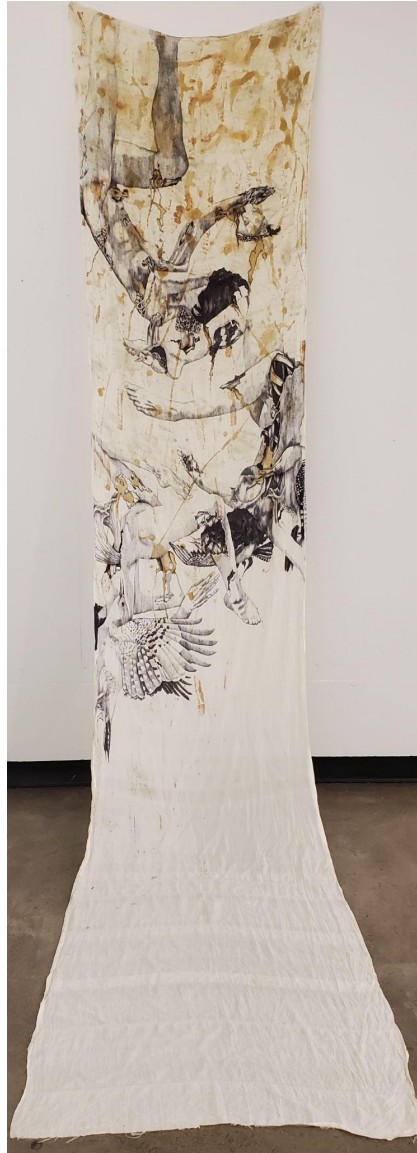


Fig. 5.1 Katie Simmons, *Vaccinium angustifolium*, 2023, Ballpoint pen and homemade natural dye made from wild blueberries (*Vaccinium angustifolium*) on silk, 150 x 32"

³ Blazan, *Haunted Nature*, 6.

⁴ Anna Tsing et al., *Field Guide to the Patchy Anthropocene: The New Nature* (Sanford University Press, 2024).



Fig. 5.2. Katie Simmons, *Vaccinium angustifolium* detail, 2023, Ballpoint pen and homemade natural dye made from wild blueberries (*Vaccinium angustifolium*) on silk, 150 x 32"

By positioning human and more-than-human together in bodily ecosystems, these drawings allude to trauma, perhaps one from which the body is now recovering by producing scar tissue and regeneration. The coalescing of entities also serves to draw parallels between similarly commodified beings, human and more-than-human, assembling them into what Anna Tsing calls a holobiont.⁵ Like humans, more-than-human entities and landscapes can have “intelligence, consciousness, agency, and intention.”⁶ Thus, it is possible, through careful analysis, to begin to view commodification of the body via sex trafficking and commodification of more-than-human species via environmental exploitation as mirror images. As Tsing suggests, “our ability to trace histories of human oppression and suffering depends on research focused on relations between humans and nonhumans.”⁷ In the age of the Anthropocene, it is certainly well documented that humans and more-than-human species are closer than ever before to one another; distances have collapsed. However, despite our proximity, humans increasingly commodify other humans and other species. French curator and art writer Nicolas Bourriaud explains that despite our closeness, there is less and less care and connection among beings as the “confrontation between body and soul is replaced with the implicit confrontation between living reality and its fiduciary translation.”⁸ Rather than economic transactions being embedded in social relations, capitalism has ushered in a reversal in which social relations become defined by economic processes.⁹ In the capitalistic anthropocene, everything can be bought and sold, everything is a resource to be exploited, everything is a commodity.

Defining Commodification

To begin to understand how I position human and more-than-human entities as commodified forms, it is helpful to understand what is meant by the term “commodity.” The anthropological work of Arjun Appadurai and Igor Kopytoff can be helpful in this regard. Simply put, a commodity is an object of

⁵ Tsing, *Field Guide*, 2024.

⁶ Blazan, *Haunted Nature*, 2.

⁷ Tsing et al., “Field Guide,” 2024. 6..

⁸ Nicolas Bourriaud, *Inclusions: Aesthetics of the Capitalocene* (Sternberg Press, 2023): 18.

⁹ Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Beacon Press, 1944).

economic value. Economic value is a definite sum arising from demand and exchange.¹⁰ Building on the work of Marx and Simmel, Appadurai explains that commodities are specific types of things with social potential that are intended for exchange and that circulate in different regimes of value. Essentially, commodities are things that have social lives, can be exchanged, and are differently valued by different individuals and in different contexts. Kopytoff agrees that commodities are specific types of things with use value that can be exchanged and specifies that a thing may be a commodity to one person and at one point in time but not another. These differences in whether or not and when a thing is a commodity reveal “a moral economy that stands behind the objective economy of visible transactions.”¹¹ If one can analyze the trajectories of these commodities, they can better understand human transactions and interactions.

Defining Commodification in Terms of Sex Trafficking

In order to analyze these trajectories and develop didactic language with which to describe the trauma of bodily commodification, a logical first step is to attempt to impartially describe these forms of commodification. This section first clearly specifies the definition of sex trafficking presently used. Subsequently, I describe categories of sex trafficking and environmental exploitation.

In the late 20th and early 21st century, the postmodern material turn catapulted academia and research towards the study of materiality, thing theory, object agency, and gift and commodity theory.¹² Philosophers, historians, anthropologists, archaeologists, theologians, aestheticians and literary researchers were plunged headfirst into the likes of new materialism, actor-network theory, object-oriented ontology, speculative realism and a range of other theories, all with a common thread of materiality underpinning their narratives. With the advent of this turn, researchers began to propose varying degrees of agency for things. Conversely, human bodies were also imagined by some as being things and commodities themselves.¹³ This new theorizing of bodies as things was, of course, predated by

¹⁰ Arjun Appadurai, “Introduction: Commodities and the Politics of Value,” in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge University Press, 1986), 4.

¹¹ Igor Kopytoff, “The Social Biography of Things: Commoditization as Process,” in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge University Press, 1986), 64.

¹² Jennifer L. Roberts, “Things: Material Turn, Transnational Turn,” *American Art* 31, no. 2 (2017): 64.

¹³ See authors such as Jane Bennett on vital materiality: Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010).

thousands of years by the actual practice of buying and selling human bodies.¹⁴ Today, humans continue to be bought, traded, and sold. Sex trafficking is one of the primary forms these enterprises take.

Imperatively, a caveat distinguishing sex trafficking from sex work must be made. There is a growing trend by some researchers and members of the public to conflate trafficking for sexual exploitation with sex work.¹⁵ The division between sex trafficking and sex work is highly contentious and is not the primary focus of this investigation. However, it is vital to make clear that sex trafficking and sex work are two completely separate entities. Sex work can be defined as “the exchange of sexual services for money or goods, including housing, food, drugs or basic necessities.”¹⁶ Relatedly, a sex worker is someone whose livelihood includes selling or trading sexual services or conduct for goods of value or money. Sex trafficking, however, is not the same as sex work. Trafficking involves the “intentional movement of someone through force, fraud, or coercion.”¹⁷ Scholars like David Okech note that sex trafficking involves recruitment, transport, transfer, harboring and/or receipt of persons by improper, forced, and violent means, sometimes through abduction.¹⁸ Therefore, sex workers can be trafficked, but not all sex workers are trafficked. It is also important to note that sex trafficking can exist without movement across borders, dramatic rescues from law enforcement, or even a complaining survivor.¹⁹

Sex Trafficking via Intimate Partner

One primary technique used to manipulate and coerce individuals into sex trafficking is through intimate relationships. Traffickers are known to lure victims into sex trafficking with false promises of romance or under the pretense of love.²⁰ Researchers find that these types of traffickers “prey on the most

¹⁴ Seth Richardson, “Mesopotamian Slavery,” in *The Palgrave Handbook of Global Slavery throughout History*, ed. Damian A Pargas and Julianne Schiel (Cham: Palgrave Macmillan, 2023): 17-39.

¹⁵ Bridget Anderson and Julia O’Connell Davidson, “Is Trafficking in Human Beings Demand Driven? A Multi-Country Pilot Study,” *IOM Migration Research Series Report* 15 (2003): 23-26; Francesca Bettio “Sex Work and Trafficking: Moving Beyond Dichotomies,” *Feminist Economics* 23, no. 3 (2017): 6; Jo Doezeema, *Sex Slaves and Discourse Matters: The Construction of Trafficking* (Zed Books, 2010).

¹⁶ Yale Global Health Justice Partnership, “Sex Work Vs Trafficking: How They Are Different and Why it Matters,” *Sex Workers and Allies Network* (June 2020): 1.

¹⁷ Yale Global Health Justice Partnership, “Sex Work,” 1.

¹⁸ David Okech et al., “Social Support, Dysfunctional Coping, and Community Reintegration as Predictors of PTSD Among Human Trafficking Survivors,” *Behavioral Medicine* 44, no. 3 (July 2018): 209-218.

¹⁹ Audrey Mumey et al., “Mental Health Needs of Sex Trafficking Survivors in New York City: Reflections on Exploitation, Coping and Recovery,” *Psychological Trauma: Theory, Research, Practice and Policy* 13, no. 2 (2021): 185.

²⁰ Emily F. Rothman, Angela R. Bazzi, and Megan Bair-Merritt, “‘I’ll Do Whatever as Long as You Keep Telling Me that I’m Important’: A Case Study Illustrating the Link Between Adolescent Dating Violence and Sex Trafficking Fictimization,” *Journal of Applied Research on Children* 6, no. 1 (2015): 1; M. Alexis Kennedy et al., “Routes of Recruitment: Pimps’

vulnerable women, seducing and entrapping them into abusive intimate relationships that end in sex trafficking.”²¹ Based on these relationships, traffickers better understand how to use different tactics to exploit vulnerabilities.²² Like many forms of sex trafficking, sex trafficking via a romantic partner is common in cases of domestic minor sex trafficking (DMST).²³ Multiple studies show that these children are first flattered, given gifts, and showered with affection by a “dating partner” who first gained emotional attachment before becoming sexually exploitative.²⁴ This abuse and exploitation only begins after the victim becomes dependent on the trafficker. In both mainstream media and academic literature on the subject, these types of traffickers are commonly referred to as “loverboys” and “Romeo pimps,” referring to the phenomenon in which these traffickers pretend to love and seduce their victims in order to force emotional dependency by means of an intimate relationship.²⁵ However, use of these terms is problematic, glamorizing and normalizing sex trafficking, and traffickers take advantage of this.²⁶ Through the use of language tergiversation traffickers attempt to separate their image from that of a predator, leaning into a dominant discourse that “portrays them as captivating, thrilling, irresistible, and unpredictable bad boys.”²⁷ In truth, these traffickers are nothing more than criminals, taking advantage of vulnerable individuals. Among the victims trafficked in this manner, there emerge several notable themes. First, research suggests that romantic partner victim-trafficker relationships may align with those of

Techniques and Other Circumstances that Lead to Street Prostitution,” *Journal of Aggression, Maltreatment, and Trauma* 15, no. 2 (2007): 1-19.

²¹ Guiomar Merodio et al., “They are Not Pimps, They are Traffickers: Overcoming the Socially Dominant Discourse to Prevent the Sex Trafficking of Youth,” *Qualitative Inquiry* 26, no. 8-9 (2020): 1010.

²² Mary K. Twis et al., “An Analysis of Romantic Partnership Dynamics in Domestic Minor Sex Trafficking Case Files,” *Journal of Interpersonal Violence* 37, no. 7-8 (2022): NP5394.

²³ Merodio et al., “Sex Trafficking of Youth,” 1010-1018; Pamela M. Anderson et al., “An Exploratory Study of Adolescent Pimping Relationships,” *The Journal of Primary Prevention* 35, no. 2 (2014): 113-117; Rothman et al., “Adolescent Dating Violence,” 1-21; Twis et al., “Domestic Minor Sex Trafficking,” NP5394-5418.

²⁴ Joan A. Reid, “Doors Wide Shut: Barriers to the Successful Delivery of Victim Services for Domestically Trafficked Minors in a Southern U.S. Metropolitan Area,” *Women and Criminal Justice* 20, no 1-2 (2010): 147-166; Rothman et al., “Adolescent Dating Violence,” 12.

²⁵ “Loverboys,” Government of the Netherlands, accessed July 1, 2025, <https://www.government.nl/topics/human-trafficking/romeo-pimps-loverboys>; Mascha Körner, “Police Investigations in ‘Loverboy’ Cases: The Modus Operandi of ‘Loverboys’ - Challenges of Law Enforcement in Dealing with the Offense of Trafficking in Human Beings,” *SIAC Journal* 19, no. 5 (2022): 77-91; Noemi Katona, Amber Horning, and Anthony Marcus, “Loved or Seduced? Intimate Relationships Between Hungarian Sex Workers and Pimps in Berlin’s Kurfürstenstraße,” in *Third Party Sex Work and Pimps in the Age of Anti-Trafficking*, ed. Amber Horning and Anthony Marcus (Springer International Publishing, 2017), 49-69.

²⁶ Merodio et al. “Sex Trafficking of Youth,” 1010-1018.

²⁷ Merodio et al., “Sex Trafficking of Youth,” 1012.

domestic violence.²⁸ This is pertinent to understanding why victims do not simply leave their trafficker. Secondly, victim-trafficker intimate relationships do not exist in a vacuum; in alignment with Urie Bronfenbrenner's ecological systems theory, individuals are influenced by a complex social system in which the victim-trafficker relationship is only one dynamic component.²⁹ Thus, it is essential to consider other circumstances of the victims' lives, including their family systems, health, finances, drug use, gang affiliation, education, criminal history, and prior abuse in order to fully understand how they became victims of sex trafficking.

Survival Sex

Another avenue in which individuals may be manipulated into sex trafficking is via survival sex. Survival sex is defined as the trade of sex to meet subsistence needs and includes exchanging sex for food, shelter, money, and drugs.³⁰ This phenomenon primarily impacts individuals who are unhoused, defined as lacking a permanent address, including those who are couch-surfing, living in temporary shelters, motels, or abandoned buildings.³¹ While unhoused adults are able to consent to survival sex, children are not; there is no such thing as a child sex worker.³² Thus, minors who are unable to consent and who are manipulated into the trade of sex are victims of sex trafficking. A recent study interviewed 641 unhoused youth in 10 major U.S. cities and found that more than 14%, 92 individuals, were trafficked for sex.³³ In this study, Laura Murphy finds that 91% of interviewed individuals reported being approached with opportunities for work that turned out to be fraudulent situations including sex trafficking. These unhoused youth experience such an increased risk of sex trafficking due to a multitude of factors. Individuals tend to experience higher rates of primary risk factors including poverty, unemployment, previous abuse, mental health issues, family members engaged in sex work, and gang

²⁸ Meredith L. Dank, *The Commercial Sexual Exploitation of Children* (LFB Scholarly Publishing, 2011); Reid, "Domestically Trafficked Minors," 147-166.

²⁹ Twis et al., "Domestic Minor Sex Trafficking," NP5412; Urie Bronfenbrenner, *The Ecology of Human Development* (Harvard University Press, 1979).

³⁰ J. M. Greene et al., "Prevalence and Correlates of Survival sex Among Runaway and Homeless Youth," *American Journal of Public Health* 89, no. 9 (1999): 1406-9; Laura T. Murphy, *Labor and Sex Trafficking Among Homeless Youth: A Ten-City Study Full Report* (Loyola University New Orleans, 2016).

³¹ Murphy, *Labor and Sex Trafficking*, 10.

³² "No Such Thing as a Youth Sex Worker: Guidelines for Inclusionary and Accurate Language on Prostitution and Sex Trafficking in Hawai'i," Community Against Exploitation Hawai'i, last modified 2022, <https://humanservices.hawaii.gov/wp-content/uploads/2022/04/1.2022-No-Such-Thing-As-A-Youth-Sex-Worker.pdf>.

³³ Murphy, *Labor and Sex Trafficking*, 4.

involvement. As such, many struggle to find work, affordable housing, and a social support system. These factors combined with hunger and fear of sleeping on the street make unhoused youth especially vulnerable to traffickers and survival sex, explains Murphy. Of the youth interviewed in this study, members of the LGBTQIA+ community, along with cisgender females were disproportionately affected by trafficking. As in the case of intimate partner traffickers, these predators prey on those who are most vulnerable in society. These patterns of behavior are not limited to the United States. Recent studies of female runaway children in Tigray, Ethiopia and Gujarat, India report similar results. These unhoused girls were exposed to a significantly higher risk of sexual exploitation due to their vulnerable status.³⁴

Virtual Sex Trafficking

In a similar manner, youth are often at the center of another method sex traffickers use to exploit victims, online manipulation and sextortion. After the passage of *Allow States and Victims to Fight Online Sex Traffickers Act* and *Stop Enabling Sex Traffickers Act* (FOSTA-SESTA) in the United States in 2018, “technology became inextricably linked to sex trafficking.”³⁵ Despite controversy in regard to its efficacy, the law is purportedly aimed at combating sex trafficking by legislating digital spaces in order to protect those victimized by cyber sex trafficking.³⁶ The legislature is increasingly relevant as the digital world and engagement with online platforms continues to expand. Sex trafficking has flourished with the incorporation of cyberspace as an avenue of recruitment.³⁷ Access to digital devices, the internet, and social media is seemingly unlimited.³⁸ Furthermore, devices and platforms continue to expand their

³⁴ Jone G. Lurgain and Carola Eyber, “Understanding Female Adolescent ‘Runaways’ and the Implications of their Decisions in Tigray, Northern Ethiopia,” *Child Abuse and Neglect* 129, no. 4 (2022): 104125; Vaishali V. Raval et al., “Damned if They Flee, Doomed if They Don’t: Narratives of Runaway Adolescent Females from Rural India,” *Journal of Family Violence* 25 (2010): 75-764.

³⁵ Allow States and Victims to Fight Online Sex Trafficking Act of 2017, Pub. L. No. 115-164, 132 Stat. 1253 (2017) <https://www.congress.gov/bills/115th-congress/house-bill/1865/text>; Lindsay B. Gezinski and Kwynn M. Gonzalez-Pons, “Sex Trafficking and Technology: A Systematic Review of Recruitment and Exploitation,” *Journal of Human Trafficking* 10, no. 3 (2024): 497.

³⁶ Gezinski and Gonzalez-Pons, “Sex Trafficking,” 497.

³⁷ Ericka Rodas, “The Multi-Facets of Cyber-Sex Trafficking: A Call for Action and Reform,” (Master’s thesis, New York University, 2014); Erin I. Kunze, “Sex Trafficking Via the Internet: How International Agreements Address the Problem and Fail to Go Far Enough,” *Journal of High Technology Law* 10, no. 2 (2010): 241-289; Jennifer E. O’Brien and Vivien Wen Li Anthony, “The Role of the Internet in the Grooming, Exploitation and Exit of United States Domestic Minor Sex Trafficking Victims,” *Journal of Children and Media* 14, no. 4 (2019): 1-17; Vuyelwa Kemiso Maweni et al., “Cybercrime in the Developing Nations: Internet as a Means of Sex Trafficking in Africa,” in *Cybercrime and Challenges in South Africa* ed. Stanley Osezua Ehiane, Sogo Angel Olofinbiyi, and Sazelo Michael Mkhize (Palgrave MacMillan, 2023), 51-73.

³⁸ “Livestreaming and Virtual Sex Trafficking,” U.S. Department of Justice, last modified 2023, <https://www.justice.gov/d9/2023-06/livestreaming-and-virtual-child-sex-trafficking-2.pdf>.

capacity for image creation and sharing. Because the internet allows for multiple forms of communication, sex trafficking proliferates.³⁹ Additionally, transactions occur rapidly online, making the internet appealing to perpetrators.⁴⁰ Cyberspace collapses distances, allowing communication across geographical space; traffickers do not need to be physically close to their victims.⁴¹ Thus, potential victims of sex traffickers are vulnerable not only to physical, visible predators, but virtual, invisible ones as well. Studies demonstrate that this anonymity allows perpetrators to more easily target potential victims.⁴² The hidden nature of these exchanges, combined with lowered inhibitions, and freer exchange of personal details online provides opportunities for traffickers to build trust with potential victims. As these relationships form, cyber sex trafficking can take multiple forms. Researchers like Ada Volodko explain that the internet can be used in each stage of trafficking: recruitment, control, surveillance, and advertising to potential customers.⁴³ The sale of sex trafficking victims via online platforms has been extensively documented.⁴⁴ Alternatively, traffickers may exploit their victims via sextortion. Sextortion refers to making threats to share nude or sexual images to “coerce victims into complying with certain demands, such as paying a ransom, sharing intimate images, or engaging in unwanted acts.”⁴⁵ Sex traffickers may use sextortion as a form of control, threatening to send nude or sexual images of the victim to other individuals.⁴⁶ During the COVID-19 pandemic and lockdown, traffickers increasingly used this method of trafficking as both trafficker and victim had to remain in their homes.⁴⁷ Similarly, a report

³⁹ Mark Latonero, “Human Trafficking Online: The Role of Social Networking Sites and Online Classifieds,” USC *Annenberg Center on Communication Leadership and Policy Research Series* (2011); Sabine Witting, “‘Cyber’ Trafficking? An Interpretation of the Palermo Protocol in the Digital Era,” *Völkerrechtsblog International Law and Legal Thought* (2017).

⁴⁰ “Backpage.com’s Knowing Facilitation of Online Sex Trafficking,” United States Senate Permanent Subcommittee on Investigations, last modified 2017, https://www.hsgac.senate.gov/wp-content/uploads/imo/media/doc/Backpage%20Report%202017_01_10%20FINAL.pdf.

⁴¹ Athanassia P. Sykiotou, “Trafficking in Human Beings: Internet Recruitment: Misuse of the internet for the Recruitment of Victims of Trafficking in Human Beings,” *Council of Europe Gender Equality and Anti-Trafficking Division* (2007): 1-145.

⁴² Mascha Körner, “Police Investigations in ‘Loverboy’ Cases,” 78.

⁴³ Ada Volodko et al., “‘Spotting the Signs’ of Trafficking Recruitment Online: Exploring the Characteristics of Advertisements Targeted at Migrant Job-Seekers,” *Trends in Organized Crime* 23 (2019): 7-35.

⁴⁴ Gezinski and Gonzalez-Pons, “Sex Trafficking,” 1-15; Sona Movsisyan, “Human Trafficking in a Digital Age: Who Should be Held Accountable?” *Michigan State International Law Review* 27, no. 3 (2019): 539-592.

⁴⁵ Alana Ray and Nicola Henry, “Sextortion: A Scoping Review,” *Trauma, Violence and Abuse* 26, no. 1 (2025): 138.

⁴⁶ Elizabeth Perkins and Carey Ruiz, “Domestic Minor Sex Trafficking in a Rural State: Interviews with Adjudicated Female Juveniles,” *Child and Adolescent Social Work Journal* 34, no. 2 (2017): 171-180; Gezinski and Gonzalez-Pons, “Sex Trafficking,” 1-15.

⁴⁷ Maweni et al., “Sex Trafficking in Africa,” 56-57.

for the United States Justice Department details how school closures and increased time spent online made children more vulnerable to sex trafficking and exploitation during the pandemic.⁴⁸

Child sexual exploitation has increased dramatically over the past decades and one form of this abuse is cybersex trafficking, also referred to as virtual child sex trafficking or livestreaming child sexual exploitation (LCSE). The report by the U.S. Department of Justice distinguishes among three types of LCSE, all of which it considers child sex trafficking. Child “self-generated” content is produced when a perpetrator “coerces, tricks, or compels children to engage in sexually explicit content on livestream.”⁴⁹ This abuse typically occurs in a private setting of the home and may be presented under the pretext of the trafficker and victim in an intimate relationship. Offender streaming, a second form of content, occurs when a trafficker sexually abuses a child in person while livestreaming the abuse to viewers. This method is usually perpetrated by someone the victim knows and may involve consumers requesting and buying certain sex acts. Lastly, virtual child sex trafficking occurs when consumers pay to watch while an offender sexually abuses the victim or consumers pay the victim directly to create material. Payment is usually made digitally and typically involves offenders in the United States or other developed countries and victims in poorer, foreign countries, the DOJ reports. In relation to the United States, the Philippines generates the most virtual child sex trafficking content due a confluence of factors including the prevalence of English, poverty, and high-speed internet in the archipelago nation. Regardless of location, this type of sex trafficking frequently involves economic disparity, taking advantage of global inequities.

Among each of these exploitative strategies emerge common themes. For example, perpetrators use similar methods to engage and manipulate victims.⁵⁰ Common methods include emotional abuse, cognitive manipulation, manipulation of guilt, affective enticement, intimidation, and threats. Researcher Carolina Andana et al. find that traffickers initially use affection to gain the trust of their victim as physical distance makes other forms of control more difficult.⁵¹ Subsequently, emotional abuse, threats,

⁴⁸ “Livestreaming and Virtual Child Sex Trafficking,” 8.

⁴⁹ “Livestreaming and Virtual Sex Trafficking,” 1.

⁵⁰ Juliane A. Kloess et al., “A Qualitative Analysis of Offenders’ Modus Operandi in Sexually Exploitative Interactions with Children Online,” *Sex Abuse* 29, no. 6 (2017): 563.

⁵¹ Carolina Andana et al., “Understanding Child Sexual Exploitation Dynamics: Development and Validation of a Taxonomy of Recruitment and Domination of Strategies,” *Sexual Abuse* 37, no. 5 (2025): 545.

blackmail, and humiliation are used “with increasing intensity after recruitment to gain control over the victims and to overcome non-compliance.”⁵² Andana et al. explain that unlike other forms of sex trafficking, abuse and control over victims’ personal lives is less common in cyber sex trafficking due to lack of physical proximity. However, like other forms of sex trafficking, victims of cyber sex trafficking are more likely to be young people who identify as sexual minorities, including young girls and women.⁵³

Familial Sex Trafficking

Within the framework of online exploitation, involvement of a family member in the trafficking process is likely.⁵⁴ Familial sex trafficking, also referred to as family-controlled sex trafficking, family-facilitated sex trafficking, and intrafamilial sex trafficking, occurs when the trafficker is a family member related to the victim.⁵⁵ In these cases, victims tend to be children under the age of 18 from non-metropolitan areas.⁵⁶ They are also typically involved in the child welfare system and frequently absent or truant from school.⁵⁷ Children who are exploited through sex trafficking by their own family members compose a significant number of child sex trafficking cases in the United States. A 2013 report finds that in a survey of child sex trafficking social service providers, 62% of survivors served were exploited by a family member.⁵⁸ In 2021, 7500 cases of sex trafficking in the U.S. were reported to the National Human Trafficking Hotline, 33% of which involved familial recruiters.⁵⁹ From 2020 to 2022,

⁵² Andana et al., “Child Sexual Exploitation,” 545; Kloess et al., “Qualitative Analysis of Offenders,” 563-91.

⁵³ Ray and Henry, “Sextortion,” 146.

⁵⁴ Melissa Wells et al., “Exploring the Role of the Internet in Juvenile Prostitution Cases Coming to the Attention of Law Enforcement,” *Journal of Child Sexual Abuse* 21, no. 3 (2012): 327-342.

⁵⁵ “Navigating the Unique Complexities in Familial Trafficking,” United States Department of State Office to Monitor and Combat Trafficking of Persons, last modified 2021, <https://www.state.gov/navigating-the-unique-complexities-in-familial-trafficking/>; Vanessa K. Voller et al., “The Hidden and Misunderstood Problem of Familial Sex Trafficking of Minors in the United States: A Scoping Review of the Literature,” *Child Welfare* 102, no. 2 (2024): 146.

⁵⁶ C. Nicole White et al., “When Families Become Perpetrators: A Case Series on Familial Trafficking,” *Journal of Family Violence* 39, no. 1 (2023): 1-13; Emily E. Edwards et al., “Family-Controlled Trafficking in the United States: Victim Characteristics, System Response, and Case Outcomes,” *Journal of Human Trafficking* 10, no. 3 (2024): 1-19; Mary K. Brannock et al., “Familial Sex Trafficking in the United States: A Scoping Review Guided by the Three P’s Framework to End Human Trafficking,” *Child Abuse and Neglect* 158 (2024): 5; Voller et al., “Familial Sex Trafficking,” 149.

⁵⁷ Brannock et al., “Familial Sex Trafficking,” 5.

⁵⁸ Jennifer Cole and Elizabeth Anderson, *Sex Trafficking of Minors in Kentucky* (University of Kentucky Center on Trauma and Child Reports, 2013), ii.

⁵⁹ “Polaris Analysis of 2021 Data from the National Human Trafficking Hotline,” accessed June 25, 2025, <https://polarisproject.org/wp-content/uploads/2020/07/Polaris-Analysis-of-2021-Data-from-the-National-Human-Trafficking-Hotline.pdf>.

recruitment by a family member was the most common recruitment strategy reported to the hotline.⁶⁰

Research and data is slowly beginning to show that trafficking by a family member is much more common than previously understood.⁶¹ However, available estimates of incidence and prevalence are likely highly underreported due to the nature of these crimes.⁶²

Among familial perpetrators, numerous studies suggest that mothers and maternal caregivers make up the majority of traffickers. For example, Reid et al. finds that 63% of cases analyzed in the state of Florida included mothers as traffickers.⁶³ Likewise, Brannock et al. finds that biological mothers were reported as traffickers in 58-66% of cases reviewed.⁶⁴ A range of studies also highlight the fact that these traffickers tend to be cisgender women, a direct challenge to the dominant imagery of the typical predator.⁶⁵ These “ideal offenders” tend to be imagined as male and People of Color.⁶⁶ Other family members are also involved in sex trafficking to a lesser extent. Reed et al. finds that cousins, uncles, and fathers acted as traffickers in 37% of cases analyzed.⁶⁷ Similarly, Brannock et al. and Reid et al. demonstrate that biological fathers, stepfathers, male cousins, uncles, and siblings are also involved in sex trafficking of family members to a lesser extent than maternal figures.⁶⁸ Multiple studies explore the reasons and incentives behind these crimes. Financial gain is one of the most frequently cited reasons.⁶⁹ Financial gains can be conceptualized as obtaining anything of value by the perpetrators.⁷⁰ This includes drugs, cash, consumer goods, and rent.⁷¹ Substance use, in particular, is documented as a strong motive

⁶⁰ “Human Trafficking During the COVID and Post-COVID Era: An Analysis of Data on Human Trafficking Situations Reported to the U.S. National Human Trafficking Hotline from 2020-2022,” Polaris Project, accessed June 25, 2025, <https://polarisproject.org/wp-content/uploads/2020/07/Hotline-Trends-Report-2023.pdf>.

⁶¹ Ginny Sprang and Jennifer Cole, “Familial Sex Trafficking of Minors: Trafficking Conditions, Clinical Presentation and System Involvement,” *Journal of Family Violence* 33 (2018): 185-195; Jody Raphael, “Parents as Pimps: Survivor Accounts of Trafficking of Children in the United States,” *Dignity* 4, no. 4 (2019).

⁶² Voller et al., “Familial Sex Trafficking,” 146.

⁶³ Joan A. Reid et al., “Family-Facilitated Juvenile Sex Trafficking,” *Journal of Crime and Justice* 38, no. 3 (2015): 366.

⁶⁴ Brannock et al., “Familial Sex Trafficking,” 5.

⁶⁵ Edwards et al., “Family-Controlled Trafficking,” 1-19; Voller et al., “Familial Sex Trafficking,” 147; White et al., “Families Become Perpetrators,” 1-13.

⁶⁶ Jonathan Todres, “Human Trafficking and Film: How Popular Portrayals Influence Law and Public Perception,” *Cornell Law Review* 101 (2015): 1-24; Kyla Raby and Nerida Chazal, “The Myth of the ‘Ideal Offender’: Challenging Persistent Human Trafficking Stereotypes through Emerging Australian Cases,” *Anti-Trafficking Review* 18 (2022): 13-32.

⁶⁷ Reed et al., “Friends, Family, and Boyfriends,” 2.

⁶⁸ Brannock et al., “Familial Sex Trafficking,” 5; Reid et al., “Juvenile Sex Trafficking,” 366.

⁶⁹ Reid et al., “Juvenile Sex Trafficking,” 367.

⁷⁰ Sprang and Cole, “Familial Sex Trafficking,” 186; Linda Smith et al., *The National Report on Domestic Minor Sex Trafficking: America’s Prostituted Children* (Shared Hope International, 2009), 1-75.

⁷¹ Brannock et al., “Familial Sex Trafficking,” 5.

for trafficking by family members.⁷² Other less common motives include religious or mystical beliefs that involve sex with [rape of] children.⁷³ Because these crimes typically involve children, there are obvious reasons why they go underreported. These victims depend on the very people who traffic them, having been groomed from a young age “to not trust police and believe what they are doing is normal or even a choice.”⁷⁴ Furthermore, children may be fearful that they will not be believed.⁷⁵ This may be especially prevalent in cases in which sexual abuse eventually leads to the perpetrator trafficking their child victim, a continuum established by scholar Jay Albanese.⁷⁶ Lastly, children may even be unaware that what is happening to them is wrong. Based on Kohlberg’s theory of moral development, children in the preconventional level, under the age of eight, adopt the moral code of adults around them, concerned with obedience and avoiding punishment. Thus, if sexual acts lead to praise, it may be seen as good behavior.⁷⁷ In the next stage of development, the conventional level, children attempt to maintain social order and are loyal to those around them. In this stage, too, a child may avoid revealing what is occurring.⁷⁸

Sex Trafficking via Fraud

Unlike sex trafficking by a family member which primarily affects children, sex traffickers using fraud as a recruitment method typically target adults. Fraud can be defined as a method of persuasion that offers misleading information and false promises.⁷⁹ Exploiting the vulnerabilities of their victims, traffickers understand that individuals, predominantly women and girls, who cannot find profitable work in their home countries are often willing to travel when offered employment. The TVPA notes that these victims are often “lured with false promises of decent working conditions at relatively good pay as

⁷² Erin C. Heil and Andrea J. Nichols, *Human Trafficking in the Midwest: A Case Study of St. Louis and the Bi-State Area* (Carolina Academic Press, 2015); Sprang and Cole, “Familial Sex Trafficking,” 186.

⁷³ Suzanne Leclerc-Madlala, “On the Virgin Cleansing Myth: Gendered Bodies, AIDS, and Ethnomedicine,” *African Journal of AIDS Research* 1, no. 2 (2002): 87-95.

⁷⁴ Brannock et al., “Familial Sex Trafficking,” 5.

⁷⁵ Edwards et al., “Family-Controlled Trafficking,” 1-9; Jeanne L. Allert, “Justice Professionals’ Lens on Familial Trafficking Cases,” *Criminal Justice Review* 47, no. 2 (2022): 208-224; Raphael, “Parents as Pimps,” 2020.

⁷⁶ Jay Albanese, *Commercial Sexual Exploitation of Children: What do We Know and What can We do About It?* (National Institute of Justice, 2007), 1-14.

⁷⁷ Lawrence Kohlberg, *The Psychology of Moral Development: The Nature and Validity of Moral Stages* (Harper Collins, 1984); White et al., “Families Become Perpetrators,” 436.

⁷⁸ White et al., “Families Become Perpetrators,” 436.

⁷⁹ Elizabeth Hopper and Jose Hidalgo, “Invisible Chains: Psychological Coercion of Human Trafficking Victims,” *Intercultural Human Rights Law Review* 1 (2006): 185.

nannies, maids, dancers, factory workers, restaurant workers, sales clerks, or models.”⁸⁰ For example, studies of Central and South American sex trafficking victims demonstrate that many women were “lured into sex trafficking through deception with promises of glamorous or well-paid jobs.”⁸¹ Others who had already travelled to the U.S. as undocumented immigrants and struggled to find employment were led to believe that they were simply taking “under the table” jobs as maids but were subsequently trafficked.⁸² Other researchers document similar cases of sex trafficking through fraud in Nigeria where women and children are trafficked from rural communities to other countries, primarily Italy.⁸³ Victims are lured into trafficking via false promises of employment, vocational training, or marriage.⁸⁴ In 2016, there were between 10,000 and 20,000 Nigerian women engaged in sex work in Italy alone, many of whom were forced into this work via trafficking.⁸⁵ Similarly, in the Philippines, underage girls are often trafficked after being recruited for work. Nyqvist et al. find that 51% of girls in their study were offered a job unrelated to sex work, only to be forced into prostitution.⁸⁶

Sex Trafficking via Coercion

Related to fraud is an additional method used by traffickers to exploit victims, namely coercion. Coercive control can be defined as a strategic set of tactics designed to limit a victim’s decision-making ability by limiting freedom, autonomy, and equality.⁸⁷ Like other forms of sex trafficking, coercive control can be difficult to see as victims are often not physically harmed or forcibly kept in captivity.⁸⁸ However, like physical violence, coercion can be extremely effective at controlling victims of sex trafficking. As such, it is included within the TVPA as an identifier of sex trafficking.⁸⁹ Falling under coercive control are

⁸⁰ Victims of Trafficking and Violence Protection Act of 2000, Pub. L. No. 106-386, 114 Stat. 1464 (2000), <https://www.congress.gov/bills/106th-congress/house-bill/3244/text>.

⁸¹ Simón Pedro Izcarra Palacios, “Migración y Trata en América del Norte,” *Revista de Estudios Sociales* 67 (2019): 87.

⁸² Lauren Copley Sabon, “Force, Fraud, and Coercion - What Do They Mean? A Study of Victimization Experiences in a New Destination Latino Sex Trafficking Network,” *Feminist Criminology* 13, no. 5 (2018): 466.

⁸³ Nnadi Ine, “Sex Trafficking and Women - The Nigerian Experience,” *Journal of Politics and Law* 6, no. 3 (2013): 181.

⁸⁴ “Trafficking in Nigeria,” Women’s Consortium of Nigeria, last modified 2025, <https://www.womenconsortiumofnigeria.org/?q=content/nigeria>.

⁸⁵ Bello Ibrahim and Jamilu Ibrahim Mukhtar, “Changing Pattern of Prostitution: An Assessment of Transnational Commercial Sex Work by Nigerian Women,” *European Scientific Journal* 12, no. 2 (2016): 81.

⁸⁶ Martina Björkman Nyqvist et al., “Understanding Child Sex Trafficking by Use of Victim-Level Data,” *Economic Development and Cultural Change* 73, no. 3 (2025): 1503.

⁸⁷ Jennifer E. Loveland and Chitra Raghavan, “Coercive Control, Physical Violence, and Masculinity,” *Violence and Gender* 4, no. 1 (2017): 1-6; Kendra Doychak and Chitra Raghavan, “‘No Voice or Vote’: Trauma-Coerced Attachment in Victims of Sex Trafficking,” *Journal of Human Trafficking* 6, no. 3 (2020): 4.

⁸⁸ Hopper and Hidalgo, “Invisible Chains,” 185.

⁸⁹ Victims of Trafficking and Violence Protection Act of 2000.

a plethora of strategies traffickers use to exploit their victims. Using the psychological coercion framework first established by Albert Biderman in 1957, Susie Baldwin et al. outline eight methods of coercion used to establish compliance: isolation, monopolization of perception, induced debility or exhaustion, threats, occasional indulgences, demonstrations of omnipotence, degradation and enforcing trivial demands.⁹⁰ In order to isolate their victims, traffickers intentionally keep them away from family, friends and other social support systems, thereby exacerbating the power imbalance between perpetrator and victim.⁹¹ Joan Reid adds that surveillance may also be involved as a way to keep victims isolated.⁹² Monopolization of perception is closely related to the strategy of isolation and involves limiting victim exposure to and understanding of the outside world, Baldwin et al. explain. Traffickers may confiscate cell phones and money, control internet and social media use, and continuously move victims.⁹³ Baldwin et al. go on to detail that inducing debility and exhaustion involves keeping victims weak by depriving them of basic necessities including food, sleep, shelter, and healthcare. Victims may also be forced to work for long periods of time and consume drugs against their will. Perpetrators may further restrict personal hygiene by limiting access to toilets and showers.⁹⁴

Threats may involve potential harm to the victim, their children, friends, and family. Additionally, these can involve threats of arrest and deportation.⁹⁵ These threats of violence function to keep victims in a constant state of fear and are often used more frequently than actual violence.⁹⁶ Baldwin et al. explain that occasional indulgences provide positive motivation for compliance and keep victims in a state of hope that they will be rewarded emotionally or materially. Intermittent reward and punishment keeps victims dependent on their traffickers, report Kendra Doychak and Chitra Raghavan. In order to

⁹⁰ Albert Biderman, "Communist Attempts to Elicit False Confessions from Air Force Prisoners of War," *Bulletin of the New York Academy of Medicine* 33 (1957): 616-625; Susie B. Baldwin et al., "Psychological Coercion in Human Trafficking: An Application of Biderman's Framework," *Qualitative Health Research* 25, no. 9 (2015).

⁹¹ Baldwin et al., "Psychological Coercion," 1173; Hopper and Hidalgo, "Invisible Chains," 189.

⁹² Joan A. Reid, "Entrapment and Enmeshment Schemes Used by Sex Traffickers," *Sexual Abuse: A Journal of Research and Treatment* 28 (2016): 491-511.

⁹³ Reid, "Entrapment," 498; Sabon, "Force, Fraud, and Coercion," 467.

⁹⁴ Hopper and Hidalgo, "Invisible Chains," 188-9.

⁹⁵ Baldwin et al., "Psychological Coercion," 1175; Lauren Copley Sabon, "Force, Fraud, and Coercion - What Do They Mean? A Study of Victimization Experience in a New Destination Latino Sex Trafficking Network," *Feminist Criminology* 13, no. 5 (2018): 470.

⁹⁶ Hopper and Hidalgo, "Invisible Chains," 188.

demonstrate their omnipotence and maintain control, traffickers may also claim to have connections with law enforcement, immigration agencies, or even God.⁹⁷

Degradation involves victims being insulted, humiliated, and denied privacy and dignity. Victims may be kept in cramped or overcrowded spaces, describe Baldwin et al. Furthermore, victims may be required to violate religious beliefs or betray or harm others.⁹⁸ Lastly, the enforcing of trivial demands allows traffickers to develop “good habits” of compliance in victims.⁹⁹ As Doychak and Raghavan describe, in severe cases, coercive control may function so “successfully” that exploited individuals become emotionally attached to their traffickers, a phenomenon known as trauma-coerced attachment (TCA).¹⁰⁰ In conjunction, these methods of psychological coercive control function to make victims believe that they have no reasonable alternative but to behave submissively.¹⁰¹ Exploring Bronfenbrenner’s ecological theory, Furlong and Hinnant, explain that the resultant vulnerability experienced by victims must be understood in relation to their lack of agency within the trafficking context.¹⁰² This lack of agency helps explain why coercive methods of control are effective in relation to sex trafficking.

Sex Trafficking via Violence

In combination with psychological coercive control, physical violence and abduction represent another means by which trafficking occurs. In order to demonstrate just how true this statement is, Stöckl et al. analyzed information taken from the largest global database on sex trafficking cases, the IOM Victim of Trafficking Database (VoTD).¹⁰³ The researchers analyzed over 10,000 victims reported between 2002 and 2018 whose cases spanned 94 countries. These cases of exploitation include data on both labor and sex trafficking. 54% of cases include reports of physical and/or sexual violence. This

⁹⁷ Baldwin et al., “Psychological Coercion,” 1176.

⁹⁸ Hopper and Hidalgo, *Invisible Chains*, 189.

⁹⁹ Baldwin et al., “Psychological Coercion,” 1177.

¹⁰⁰ Doychak and Raghavan, “No Voice or Vote,” 2.

¹⁰¹ Hopper and Hidalgo, *Invisible Chains*, 187.

¹⁰² Courtney Furlong and Ben Hinnant, “Sex Trafficking Vulnerabilities in Context: An Analysis of 1,264 Case Files of Adult Survivors of Commercial Sexual Exploitation,” *PLoS One* 19, no. 11 (2024): 3; Bronfenbrenner, *The Ecology of Human Development*, 1979.

¹⁰³ Heidi Stöckl et al., “Human Trafficking and Violence: Findings from the Largest Global Dataset of Trafficking Survivors,” *Journal of Migration and Health* 4 (2021): 100073.

violence was significantly associated with sex trafficking, being female, young age, and high socio-economic status. These findings include both expected and unexpected results. It is often assumed that sex trafficking-related violence is gendered, and this is the case based on these data. However it is also frequently assumed that the poorest, least educated are at the greatest risk of trafficking, and this is not what these data show.¹⁰⁴ It is possible, details Stöckl et al., that trafficking victims who have more resources to leave an exploitative environment may be perceived by traffickers as requiring a higher degree of control to ensure their compliance. Further studies draw parallels between the violence experienced by victims of sex trafficking and domestic violence.¹⁰⁵ Both involve gendered violence against women which can be defined as “any act of gender-based violence that results in, or is likely to result in physical, sexual or psychological harm or suffering to women.”¹⁰⁶ Both crimes involve the subordination, objectification, commodification, and dehumanization of women and use sexual violence as a tool to exert power and control. Numerous studies detail this violence with specific case studies. For example, a study out of India by Kamalesh Sarkar et al. analyzes data collected among brothel-based sex workers of West Bengal to elucidate connections among sex trafficking, violence, and HIV infection.¹⁰⁷ Sarkar et al. finds that one in four sex workers had actually been trafficked. Furthermore, violence was significantly more common among trafficked victims compared to those who chose to work voluntarily: 57% of trafficking victims reported violence compared to 15% of voluntary sex workers. HIV was also significantly associated with both violence and trafficking. Similarly, in a study of trafficked women seeking services across Cambodia, 30.9% reported sexual abuse and 9.6% reported being physically beaten.¹⁰⁸

¹⁰⁴ T. S. Passos et al., “Profile of Reported Trafficking in Persons in Brazil Between 2009 and 2017,” *Journal of Interpersonal Violence* 37, no. 11 (2017): 1-17.

¹⁰⁵ Danielle Malangone and Katie Crank, *The Intersection of Domestic Violence, Sexual Assault, and Human Trafficking*, (Center for Court Innovation, 2015): 1-3; Maite Verhoeven et al., “Relationships Between Suspects and Victims of sex Trafficking: Exploitation of Prostitutes and Domestic Violence Parallels in Dutch Trafficking Cases,” *European Journal on Criminal Policy and Research* 21, no. 1 (2015): 49-64.

¹⁰⁶ Marianna Smirnova, “Understanding the Link Between Human Trafficking and Violence Against Women,” Human Trafficking Resource Project, accessed July 1, 2025, https://www.nsvrc.org/sites/default/files/NSAC11_Handouts/NSAC11_HT__VAW_09-16-11_Smirnova.pdf.

¹⁰⁷ Kamalesh Sarkar et al., “Sex-Trafficking, Violence, Negotiating Skill and HIV Infection in Brothel-Based Sex Workers of Eastern India, Adjoining Nepal, Bhutan and Bangladesh,” *Journal of Health, Population and Nutrition* 26, no. 2 (2008): 223-231.

¹⁰⁸ Heather L. McCauley et al., “Trafficking Experiences and Violence: Victimization of Sex-Trafficked Young Women in Cambodia,” *International Journal of Gynecology and Obstetrics* 110, no. 3 (2010): 266-267.

Forced physical abduction is closely related to physical violence and is a strategy primarily used by organized crime syndicates and terror groups as recognized by the United Nations, reports Christiana Attah.¹⁰⁹ Abductions and kidnappings form part of the modus operandi of terror groups in order for them to acquire individuals, usually girls and women, who are trafficked for multiple purposes. As with other forms of sex trafficking, one motivation for terror groups is financial. During the Yazidi genocide by ISIL (Islamic State of Iraq and the Levant) in Sinjar, Iraq, women were captured and trafficked into an internal sexual market in which they were bought and sold.¹¹⁰ Similarly, Attah et al. explain that trafficked women in these cases may be used as a form of reward or motivation for current members. For example, the Taliban in Afghanistan frequently abducted women for soldiers and commanders to rape.¹¹¹ Unlike many other traffickers, terrorists also use victims as a form of sexual humiliation for the males in the communities they attack. They also use their crimes as a way to spread fear amongst communities and assert their authority. For example, in Nigeria, Boko Haram reports the horrors that women and girls are subjected to in order to incite fear.¹¹² Some terror groups may also use these tactics to rape and impregnate victims in order to create a new generation of fighters or dilute the victims' bloodlines, explain Attah et al. Boko Haram fighters have "married" victims and subsequently raped and impregnated them to sire new fighters.¹¹³ Likewise, in former Yugoslavia, Muslim and Croat women were impregnated and detained for 6 months to ensure they did not abort the fetuses.¹¹⁴ The Janjaweed have used similar tactics in Sudan during the Darfur genocide.¹¹⁵

Defining Commodification in Terms of Environmental Exploitation

Like human bodies, more-than-human bodies experience commodification at the hands of Man. Although innumerable in form, these forms of exploitation can be categorized into the areas of fossil fuel

¹⁰⁹ Christiana Ejura Attah, "Terrorism, Human Trafficking and Conflict-Related Sexual Violence: Examining the Nexus," *Journal of Human Trafficking, Enslavement and Conflict-Related Sexual Violence* 1, no. 2 (2020): 129.

¹¹⁰ Todd Sandler and Walter Enders, "An Economic Perspective on Transnational Terrorism," *Journal of Political Economy* 20, no. 2 (2004): 301-316.

¹¹¹ Elsie Gonzalez, "The Nexus Between Human Trafficking and Terrorism/Organized Crime: Combating Human Trafficking by Creating a Cooperative Law Enforcement System," *Law School Student Scholarship* 227 (2013).

¹¹² Attah, "Terrorism," 126.

¹¹³ Mia Bloom and Hilary Matfess, "Women as Symbols and Swords in Boko Haram's Terror," *Prism* 6, no. 1 (2016): 111.

¹¹⁴ Elisabeth Jean Wood, "Variation in Sexual Violence During War," *Politics and Society* 34, no. 3 (2006): 313.

¹¹⁵ Attah, "Terrorism," 131.

extractivism, mining extractivism, water and hydropower, agriculture and seed privatization, ecotourism, hunting, fishing, the trade in wildlife species, the pharmaceutical industry, landfills, and trees and wood products.

Fossil Fuel Extractivism

Extraction of fossil fuels represents a major way in which humans commodify nature and the environment. Fossil fuels are non-renewable energy sources derived from carbon-based buried remains of prehistoric organisms. These fuels include petroleum (oil), natural gas, and coal. It is no secret that these naturally-occurring carbons and hydrocarbons have been heavily commodified since the Industrial Revolution in order to fuel modern life. And, although Secretary-General of the United Nations, António Guterres, recently presented a hopeful address in July, 2025 on the fading of a fossil fuel era, the most recent data from developed countries like the United States shows that this is not yet the case.¹¹⁶ In 2023, fossil fuels represented 83% of energy consumption in the U.S.¹¹⁷ By 2040, the use of unconventional oil and gas extraction through hydraulic fracturing and horizontal drilling is expected to double.¹¹⁸ The extraction and use of these naturally-occurring materials continues to be a primary way in which humans commodify nature and these practices occur across the globe. In western Uganda, for example, oil was first discovered in the 1870s, but it wasn't until 2006 that it was confirmed as commercially viable.¹¹⁹ Within Uganda, this oil is located in the Albertine Graben, a rift valley estimated to hold 2.5 billion barrels of oil worth more than \$2 billion annually for more than twenty years.¹²⁰ This natural resource clearly has the potential to generate development and wealth for Uganda. The Albertine Graben is divided into ten areas of exploration and drilling began in June, 2023.¹²¹ Development of infrastructure includes

¹¹⁶ Vibhu Mishra, "UN's Guterres Declares Fossil Fuel Era Fading; Presses Nations for New Climate Plans for COP30 Summit," *United Nations*, July 22, 2025, <https://news.un.org/en/story/2025/07/1165460>.

¹¹⁷ "U.S. Energy Facts Explained," U.S. Energy Information Administration, last modified July 15, 2024, <https://www.eia.gov/energyexplained/us-energy-facts/>.

¹¹⁸ Miriam R. Aczel and Karen E. Makuch, "Shale Resources, Parks Conservation, and Contested Public Lands in North Dakota's Theodore Roosevelt National Park: Is Fracking Booming?" *Case Studies in the Environment* 4, no. 1 (2020): 1.

¹¹⁹ John Wulugembe et al., "Farmers in Uganda's Oil Economy: Deal or no Deal: Scenarios for Danger and Redemption," *Agency for Transformation* (2013): 6.

¹²⁰ Ben Shepherd, *Oil in Uganda: International Lessons for Success* (Chatham House, 2013): 2.

¹²¹ Catrina MacKenzie et al., "Drilling through Conservation Policy: Oil Exploration in Murchison Falls Protected Area, Uganda," *Conservation and Society* 15, no. 3 (2017): 324; "Murchison Falls National Park is Dying: How Oil Activities, Climate Change, and Poaching are Negatively Reshaping the Park," Africa Institute for Energy Governance, last modified July, 2024,

drilling rigs, wellpads, flowlines, pipelines, and roads. Three of these areas overlap with seven protected areas that are global diversity hotspots, including Murchison Falls Protected Area (MFPA), locally known as Kabalega National Park.¹²² The park is one of Uganda's largest, most visited, oldest, and species-rich areas, home to 556 species of birds, 51 reptiles, 51 amphibians, 144 mammals, and 755 plants.¹²³ However, because Uganda Wildlife State 1996, Section 19(5) specifically allows "economic activity" within protected areas, fossil fuel extraction is permitted here.¹²⁴

Across the Atlantic ocean in Argentina, similar fossil fuel extraction is present. In 2012, Argentina regained control of their state oil and gas company, Yacimientos Petrolíferos Fiscales (YPF) which had previously been privatized in 1993 and bought by a Spanish energy company in 1999.¹²⁵ Only a year earlier the Energy Information Administration (EIA) published an assessment of regions outside of the United States with shale gas resources in which Argentina was ranked as third highest in the world.¹²⁶ These events triggered exploration and extraction activities using hydraulic fracturing, commonly referred to as fracking. Fracking involves drilling to extract oil and natural gas from "tight" rock, in this case shale, by fracturing it with pressurized fluid. Fracking was developed during the Civil War when it was observed that artillery cracked bedrock, creating channels through which oil could more easily flow.¹²⁷ By 2013, Argentina was reported as the largest producer of shale gas in South America with a large portion of this resource in the geologic Vaca Muerta formation of the Neuquén Basin.¹²⁸

Oil and gas extraction is also prevalent in the United States and unconventional oil and gas extraction activities, including fracking and horizontal drilling, are common here as well.¹²⁹ Advances in

<https://www.afiego.org/wp-content/uploads/2024/07/Research-brief-Impact-of-Tilenga-oil-activities-on-Murchison-Falls-NP-July-2024.pdf>.

¹²² Andrew Plumptre et al., "The Biodiversity of the Albertine Rift," *Biological Conservation* 134, no. 2 (2007): 178-194.

¹²³ Andrew Plumptre et al., *Biodiversity Surveys of Murchison Falls Protected Area* (Wildlife Conservation Society, 2015), 2.

¹²⁴ MacKenzie et al., "Drilling through Conservation," 324.

¹²⁵ Elvin Delgado, "Fracking Vaca Muerta: Socioeconomic Implications of Shale Gas Extraction in Northern Patagonia, Argentina," *Journal of Latin American Geography* 17, no. 3 (2018); M. Barrera et al., *Historia de una privatización: ¿Cómo y por qué se perdió YPF* (Capital Intelectual, 2012).

¹²⁶ Energy Information Administration, *World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States* (U.S. Department of Energy, 2011).

¹²⁷ Melissa Denchak, "Fracking 101," *Natural Resources Defense Council*, April 19, 2019, <https://www.nrdc.org/stories/fracking-101>.

¹²⁸ Energy Information Administration, *Technically Recoverable Shale Oil and Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States* (Department of Energy, 2013).

¹²⁹ Paul L. Joskow, "Natural Gas: From Shortages to Abundance in the United States," *American Economic Review* 103, no. 3 (2013): 338-343.

technology have allowed these newer methods of fossil fuel extraction to expand to environments previously unused.¹³⁰ Additionally, energy producers are looking to publicly owned lands for extraction sites.¹³¹ These publicly owned lands include national parks, national wildlife refuges, national forests, and Bureau of Land Management (BLM) land. In 2017, 12 national park sites had active drilling wells representing 98 separate companies. Over 30 park sites predicted future hydrocarbon development based on private ownership of subsurface rights.¹³² These subsurface rights result in split estates, when the surface land is owned publicly, but below-ground rights are held by private entities.¹³³ This has led to conflicts and reevaluations of regulations governing development in federally owned land.¹³⁴ In 1978, the National Park Service (NPS) established laws, known as 9B Regulations, to maintain a balance between public and private rights.¹³⁵ In 2016, the park service updated these regulations to extend exemptions that allow wells to operate without NPS approval and require higher use fees for oil and gas companies.¹³⁶ This has led to increased fossil fuel extraction on NP lands. For example, in Theodore Roosevelt National Park (TRNP) in North Dakota, oil was discovered after the park's establishment in 1947.¹³⁷ TRNP is located in the Bakken Shale Basin, one of the largest oil and gas shales in North America with an estimated 7.4 billion barrels of recoverable oil.¹³⁸ Fracking and horizontal drilling have intensified rapidly here as technology improves.¹³⁹ Between 2005 and 2018, more than 15,000 new wells opened in the region.¹⁴⁰

¹³⁰ Avner Vengosh, "A Critical Review of the Risks to Water Resources from Unconventional Shale Gas Development and Hydraulic Fracturing in the United States," *Environmental Science and Technology* 48, no. 15 (2014): 8334-48.

¹³¹ Aczel and Makuch, "Shale Resources," 1.

¹³² Daniel Hart, "National Parks Affected by 9B Rules," *National Parks Conservation Association*, February 10, 2017, <https://www.npca.org/resources/3190-national-parks-affected-by-9b-rules>.

¹³³ Stacia S. Ryder and Peter M. Hall, "The Land is Your Land, Maybe: A Historical Institutional Analysis for Contextualizing Split Estate Conflicts in U.S. Unconventional Oil and Gas Development," *Land Use Policy* 63, no. 1 (2017): 149-159.

¹³⁴ Aczel and Makuch, "Shale Resources," 9.

¹³⁵ National Park Service, *Operators Handbook for Nonfederal Oil and Gas Development in Units of the National Park System* (Department of the Interior, 2006).

¹³⁶ "General Provisions and Non-Federal Oil and Gas Rights," Federal Register, last updated November 4, 2016, <https://www.federalregister.gov/documents/2016/11/04/2016-26489/general-provisions-and-non-federal-oil-and-gas-rights>; N. Lund, "The Facts on Oil and Gas Drilling in National Parks," *National Parks Conservation Association*, March 29, 2017.

¹³⁷ Melanie D. G. Kaplan, "Drilling Down: Fracking Adjacent to Theodore Roosevelt National Park is Changing the Landscape and a Whole Lot More," *National Parks Conservation*, 2014, <https://www.npca.org/articles/958-drilling-down>.

¹³⁸ Carlin M. Howden et al., "Impact of the Bakken/Three Forks Unconventional Oil and Gas Development on Natural Habitats in North Dakota," *Land Degradation and Development* 30, no. 5 (2019): 525.

¹³⁹ Aczel and Makuch, "Shale Resources," 5.

¹⁴⁰ Howden et al., "Impact of the Bakken," 526.

Similarly, in the state of Tennessee, fracking occurs in the Chattanooga shale field which runs across the eastern side of the state.¹⁴¹ Unlike other shale plays, Tennessee's is more shallow which results in less water being used in the fracking process. Therefore, companies like CONSOL Energy which has gas leases on 240,000 acres in Anderson County, Tennessee, will not be required to notify the public of fracking endeavors unless they exceed 200,000 gallons of water.¹⁴² In fact, Tennessee's state government maintains no maps of oil and gas wells and does not track wells that use hydraulic fracturing.¹⁴³ These substances, composed of long-dead bodies of once-living organisms, are akin to liquid or gaseous gold. However, commodification does not stop here. The Earth's body, from its soil horizons down to the bedrock, are commodified spaces to be bought up and privatized.

Mining Extractivism

Similar in its extractive methodology, mining is another form of commodification of the environment and involves the removal of geological rocks and minerals from Earth's surface and crust. The country of Chile, for example, is the primary producer of copper globally with the majority of mining occurring in the Atacama Desert located in the Loa River Basin.¹⁴⁴ Chilean mining comprises a significant portion of the country's GDP, with the majority of that production resulting from Copper mining specifically.¹⁴⁵ The Atacama Desert is the oldest and one of the driest non-polar deserts in the world due to the north-flowing Humboldt oceanic current and rain shadow effect of the Andes.¹⁴⁶ Copper mining in this

¹⁴¹ Pam Sohn, "Stage is Set for Fracking in Tennessee," *Chattanooga Times Free Press*, January 28, 2013, <https://www.timesfreepress.com/news/2013/jan/28/stage-is-set-for-fracking-in-tennessee/>.

¹⁴² "Fracking Operation Set to Break Ground After the State of Tennessee Passes New Regulation on Hydraulic Fracturing," *The Center for Health, Environment, and Justice*, June 8, 2013, <https://chej.org/fracking-operation-set-to-break-ground-after-the-state-of-tennessee-passes-new-regulation-on-hydraulic-fracturing>.

¹⁴³ "Tennessee," Fracktracker Alliance, last modified 2025, <https://www.fracktracker.org/map/us/tennessee/>.

¹⁴⁴ Comisión Chilena del Cobre, *Anuario de estadísticas del cobre y otros minerales 2004-2023* (Comisión Chilena del Cobre, 2024); Matías Calderón-Seguel and Manuel Prieto, "Mining Extractivism, Commodification of Nature and Indigenous Peasantry in the Atacama Desert: The Political Economy of Yareta (*Azorella compacta*) in Historical Perspective (1915-1960)," *Latin American Perspectives* 51, no. 1 (2024): 185.

¹⁴⁵ Servicio Nacional de Geología y Minería (SERNAGEOMIN), *Anuario de la Minería de Chile 2016* (Ministerio de Minería, 2016): 45.

¹⁴⁶ Jason A. Rech, "Evidence for the Development of the Andean Rain Shadow from a Neogene Isotopic Record in the Atacama Desert," *Earth and Planetary Science Letters* 292, no. 3-4 (2010): 371-382; P. Pérez-Portilla et al., "Assessing the Effects of Long-Term Mining Exploitation on a Lacustrine System from the Arid Region of the Atacama Desert, Chile," *The Science of the Total Environment* 949 (2024): 2.

region has existed since pre-Columbian times and continues to expand as copper cannot be easily substituted for other materials due to its conductivity.¹⁴⁷ The main mine in the area is Chuquicamata which grew significantly following investment by American firms in 1911 and growth of the metal's industrial use.¹⁴⁸ The mine has extensive porphyry copper deposits which form when hydrothermal fluids intrude igneous rock. Mining occurred in open pits until 2019 when underground mining began as well.¹⁴⁹ Copper mining here has resulted in new employment opportunities and ways of life for those living in the region, including the Lickanantay Indigenous People.¹⁵⁰ As mining developed, so too did the need for fuel for certain mining processes and the people living in mining camps. This prompted the large-scale harvesting and use of yareta, a cushion plant that grows between 3800 and 5200 meters above sea level in the south-central Andes and can live an average of 850 years, describe researchers Calderón-Seguel and Prieto. As one of the only woody plant species growing in the area, its use became widespread. Yareta has also been used to fuel borate mines in Chile. For example, after the Salar de Ascotán became part of Chilean territory as a result of the War of the Pacific from 1879 to 1884, yareta was used to fuel the creation of a borate mining zone.¹⁵¹ Borates can be mined from surface pits and the industrial minerals can be used in fertilizers, fiberglass, detergents, and fire retardants.¹⁵² An additional form of mining common in Chile is Molybdenum. In the Tarapacá Region in the southeast, the Compañía Minera Doña Inés de Collahuasi (CMDIC) extracts molybdenum from open-cast extraction sites.¹⁵³ In neighboring Peru, artisanal small-scale gold mining (ASGM) also dominates expansive areas that were once rainforests.¹⁵⁴

¹⁴⁷ Branco W. Schipper et al., "Estimating Global Copper Demand Until 2100 with Regression and Stock Dynamics," *Resources Conservation and Recycling* 132 (2018): 28-36; Pérez-Portilla et al., "Long-Term Mining," 2.

¹⁴⁸ Viviana Fernandez, "Copper Mining in Chile and its Regional Employment Linkages," *Resources Policy* 70 (2021).

¹⁴⁹ Lindsey Doermann, "Copper Mining at Chuquicamata," *NASA Earth Observatory*, January 4, 2024,

<https://earthobservatory.nasa.gov/images/152368/copper-mining-at-chuquicamata>.

¹⁵⁰ Calderón-Seguel and Prieto, "Mining Extractivism," 189.

¹⁵¹ Damir Galaz-Mandakovic F. and Francisco Rivera Amaro, "The Development of Borax Mining in the Salar de Ascotán and the Production of an Ecological Subsidiary: Origins, Tax Exemptions, and the Decimation of Yareta 1880-1915," *The Extractive Industries and Society* 24 (2025): 2.

¹⁵² "Potash, Soda Ash, and Borates," in *ITP Mining: Energy and Environmental Profile of the U.S. Mining Industry* (Department of Energy, 2013): 2.

¹⁵³ Cristina Mata et al., "A Three-Step Approach to Minimise the Impact of a Mining Site on Vicuña (Vicuña Vicugna) and to Restore Landscape Connectivity," *Environmental Science and Pollution Research International* 23, no. 14 (2016): 13628.

¹⁵⁴ Alejandro Portillo et al., "Mercury Bioaccumulation in Bats in Madre de Dios Peru: Implications for Hg Bioindicators for Tropical Ecosystems Impacted by Artisanal and Small-Scale Gold Mining," *Ecotoxicology* 33, no. 4-5 (2024): 457.

On the other side of the world in Myanmar, mining for naturally-occurring gemstones occurs on an equally large scale. The town of Mogok is known as the ruby capital of the world with both open pit and underground mines that utilize mechanized and small-scale traditional extraction methods.¹⁵⁵ Rubies are a form of crystalline aluminum oxide known as corundum. A significant proportion of very fine, high-value rubies come from Myanmar, specifically the Mogok Stone Tract which has produced the gemstones since 600 CE.¹⁵⁶ Formerly known as Burma, Myanmar and its mines were controlled by British rule from 1886 to 1925 and the country was later nationalized by state communist regimes from 1962 to 1992.¹⁵⁷ From 2008 to 2012 countries including the U.S. banned the importation of rubies from Myanmar due to human rights violations by the country's militarized government. More recently, after attempts were made to instate a parliamentary democracy, sanctions were lifted, only to be followed by additional partial bans after a civil conflict ensued in 2021.¹⁵⁸ These bans applied to rubies as well as jade for which Myanmar is also known. Jade, the second most valuable gemstone in the world, is another product of mining.¹⁵⁹ Most jade mining occurs in the foothills of the Himalayas between India and China in the Kachin state. Most of these stones are smuggled across the border to China where they are coveted.¹⁶⁰

Another type of mining extraction occurs in Mexico in Baja California where beach pebbles are gathered and exported as artisanal, exotic rocks for landscaping and construction.¹⁶¹ Author and professor of anthropology and sociology, Christian Zolniski, explains that this extraction serves as a primary source of income for many Indigenous workers and constitutes a form of small-scale mining. It's perpetuated by

¹⁵⁵ Ohn Thwin et al., "Environmental and Social Impacts of Mining in the Mogok Area, Pyin Oo Lwin District, Mandalay Region, Myanmar," in *Population, Development, and the Environment: Challenges to Achieving the Sustainable Development Goals in the Asia Pacific*, ed. Helen James (Palgrave Macmillan, 2019), 155-169.

¹⁵⁶ Gaston Giuliani et al., "Ruby Deposits: A Review and Geological Classification," *Minerals* 10, no. 7 (2020): 597.

¹⁵⁷ Tony Waltham, "The Ruby Mines of Mogok," *Geology Today* (1999).

¹⁵⁸ "Do the 2021 U.S. Myanmar Sanctions Affect the Jade Trade?" International Gem Society, last modified March 12, 2024, <https://www.gemsociety.org/article/2021-myanmar-sanctions-jade/>; Mary Bradley, "Genocide Gems': How the Gemstone Industry is a Backdrop to Myanmar's Unrest," *Michigan State International Law Review*, July 16, 2021, <https://www.msuir.org/new-blog/2021/7/9/genocide-gems-how-the-gemstone-industry-is-a-backdrop-to-myanmars-unrest>.

¹⁵⁹ Mandy Sadan and Seng Lawn Dan, "The Role of Artisanal Mining in the Sustainable Development of Myanmar's Jadeite Industry," *Environmental Science and Policy* 126 (2016): 189-196.

¹⁶⁰ Hannah Beech, "Battling for Blood Jade: Myanmar's Jade Mines May Yield Great Wealth - But They Leave a Long Trail of Death. An Exclusive Report," *TIME*, accessed July 15, 2025, <https://time.com/battling-for-blood-jade/>.

¹⁶¹ Christian Zolniski, "Commodification of Nature and Labor Precarity: The Extraction of Beach Cobbles in Northern Mexico," *Dialectical Anthropology* 49, no. 1 (2025): 29-51.

the expansion of a green economy, predicated on the false understanding that the use of beach cobbles is sustainable and reduces water consumption in arid regions where pebbles are used in place of grass.

Within Baja, most mining occurs along 100 miles of coastline in the San Quintín Valley. Mining of this coastal resource began in the 1990s after federal and state governments began promoting the practice to attract foreign investment and create new jobs.¹⁶² In 1992, the Mexican government approved the privatization of ejido lands, communal property previously used for agriculture. In addition to the legal mining that occurs via government-issued licenses, illegal extraction is also present. Those who do have permission to operate also extract larger volumes than licenses allow as they are not strictly enforced. With proximity to the United States, exportation across the border is high. In 2019, for example, the U.S. imported over 3 million tons of beach cobbles valued at over \$34,000,000. Workers frequently come and go as mining occurs in an informal economy with no official labor statistics; there is no documentation of the number of workers, their demographics, or their wages.¹⁶³ As the region becomes more arid and water scarcity worsens, it is likely that the number of low-income Indigenous workers will increase in this sector.

In these cases of mining extractivism, a multitude of commodified bodies exist. The mined substances themselves, copper, borax, gold, rubies, jade, and beach cobbles, are fragments of the Earth, stripped out of their resting spot and forced into a market economy. Additionally, as in the cases of oil and natural gas extractivism, the land on which the mining occurs is a commodity in itself. It is bought and sold, its surface and soil mauled to get at precious resources. In many cases, living organisms like yareta are similarly commodified as secondary resources required for the primary mining activity to occur. Importantly, in many of these cases, Indigenous bodies also become commodities along with natural resources as foreign corporations plumb the depths of their traditional knowledge of the land and inexpensive labor.

¹⁶² Zolniski, "Commodification of Nature," 34.

¹⁶³ Zolniski, "Commodification of Nature," 33.

Water

Water on Earth continues to be commodified in a plethora of ways, notably for the purposes of drinking water and hydropower. In the arena of drinking water, there is no larger sector of commodification than that of bottled water. Although Indigenous tribes in America were storing water for drinking long before the arrival of Europeans, true commodification of water via bottling began in the post-Columbian era.¹⁶⁴ Inspired by French spa resorts in the 18th century, immigrants to America visited springs for their apparent health benefits and as a way to emulate nobility, describes scholar Joyce Ahn.¹⁶⁵ Springs around which these resorts were constructed also began bottling the water. For example, companies bottling water from Saratoga Springs in New York sold seven million bottles annually by 1865. Ahn describes that by the beginning of the 20th century, cities implemented water treatment processes after the discovery of waterborne bacteria, resulting in a decrease in consumption of bottled water. However, In the United States, this public drinking water proved to not always be reliable or safe. Health scares, contamination, scarcity, and bad taste have long driven people to buy bottled water. For example, in 1993 in Milwaukee, a waterborne outbreak of *Cryptosporidium* resulted in 69 people dying and over 400,000 becoming ill.¹⁶⁶ Even in 2025, some cities still do not test for *Cryptosporidium* and between 2009 and 2017 the number of cases of *Cryptosporidium*-caused illnesses increased by an average of 13% each year, resulting in over 800,000 illnesses annually.¹⁶⁷ More recently in 2014, the Flint Water Crisis plagued Michigan. Although the city of Flint was once home to General Motors, by the 1980s, foreign imports resulted in job loss and steady population declines with about a third of residents with incomes below the poverty line. After the city's debt fell under state control, the decision was made to stop piping treated water to Flint from Detroit and, instead, pump water from the Flint River to residents. By 2014, Flint was drinking foul-smelling and tasting water contaminated with lead, fecal coliform

¹⁶⁴ Joyce S. Ahn, "Uncapping the Bottle: A Look Inside the History, Industry and Regulation of Bottled Water in the United States," *Journal of Food Law and Policy* 3, no. 2 (2007): 175.

¹⁶⁵ Ahn, "Uncapping," 176.

¹⁶⁶ William R. MacKenzie et al., "A Massive Outbreak in Milwaukee of *Cryptosporidium* Infection Transmitted through Public Water Supply," *The New England Journal of Medicine* 33, no. 3 (1994): 161-167.

¹⁶⁷ Lou Dzierzak, "U.S. Drinking-Water Systems Still Haven't Defeated this Nasty Parasite," *Scientific American*, December 7, 2023, <https://www.scientificamerican.com/article/u-s-drinking-water-systems-still-havent-defeated-this-nasty-parasite/>.

bacteria, and cancer-causing trihalomethanes.¹⁶⁸ The city didn't complete the pipe replacement program until 2025, 11 years later.¹⁶⁹ Likewise, extensive agricultural practices in the midwest United States have resulted in drinking water contamination with pesticides and herbicides such as atrazine and glyphosate.¹⁷⁰ Taste and odor of water, frequently referred to as T&O can be the result of high levels of chloride, iron, manganese, copper, zinc, magnesium, or high pH and represents an additional set of justifications for turning to bottled water.

Distrust of public water resulted in a drastic increase in bottled water consumption that began in the 1980s and 90s. Dr. Andy Opel, professor at Florida State University, reports that between 1981 and 1997, bottled water consumption went from 1.8% of U.S. liquid consumption to 6.9%.¹⁷¹ The beverage industry has capitalized on tension between consumers and public water, demonizing the government as inefficient. More and more individuals spend their money on corporate purity rather than calling on public officials to address their public water supply. Thus, a typical strategy for private bottled water companies is to establish the purity of their product while raising fears of contamination, taste, and odor in public drinking water. With a relatively low cost of production, these companies can generate substantial profits, leading more and more corporations to enter the water industry. For example, Opel explains that PepsiCo first joined the water market in 1994 and introduced its brand, Aquafina, in 1998. However, by the 2000s, resistance to these companies began, primarily in areas destined for new wells and bottling plants.¹⁷² For example, Nestle, the most profitable bottled water firm in North America, is notorious for acquiring legal rights to water by courting local officials behind closed doors, failing to notify the public about its plans.¹⁷³ As reported by Dr. Soren Newman and Daniel Jaffee, with profits in the billions each year, Nestle owns over 15 brands and operates dozens of water extraction sites in the U.S.¹⁷⁴ These researchers

¹⁶⁸ Melissa Denchak, "Flint Water Crisis: Everything You Need to Know," *Natural Resources Defense Council*, July 1, 2025, <https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know>.

¹⁶⁹ Denchak, "Flint Water Crisis."

¹⁷⁰ Andy Opel, "Constructing Purity: Bottled Water and the Commodification of Nature," *Journal of American Culture* 22, no. 4 (1999): 67.

¹⁷¹ Opel, "Constructing Purity," 67.

¹⁷² Daniel Jaffee and Soren Newman, "A More Perfect Commodity: Bottled Water, Global Accumulation, and Local Contestation," *Rural Sociology* 78, no. 1 (2013): 1-28.

¹⁷³ Noah Hall, "Protecting Freshwater Resources in the Era of Global Water Markets: Lessons from Bottled Water," *University of Denver Water Law Review* 13, no. 1 (2009): 1-53.

¹⁷⁴ Daniel and Newman, "Perfect Commodity," 13.

detail the case of McCloud, California, a former mill town located at the base of Mount Shasta, where Nestle planned to install a bottle plant for its Arrowhead brand in the early 2000s. As an unincorporated hamlet with approximately 1200 residents and a 20% unemployment rate at the time, McCloud had experienced economic distress since the timber industry declined in the 1990s. In 2003, the McCloud Community Services District voted to approve a contract with Nestle which was negotiated in secret with no public input. Had the plan come to fruition, it would have allowed Nestle to build the nation's largest bottling plant with access granted for 99 years at the price of \$0.00008 per gallon (\$0.01 per 123 gallons) which was drastically below industry norms at the time. After news of the agreement emerged, public opposition resulted in legal challenges and Nestle ultimately rescinded the proposal entirely. Regardless, Nestle and other companies continue to market bottled water successfully, offering a variety of products. However, the basic commodities are the same: Purified water is water that has undergone treatment processes to meet a range of standards while mineral water must come from an underground source that contains at least 250 ppm dissolved, naturally-occurring solids.¹⁷⁵ Similarly, artesian water is sourced from a ground water aquifer under pressure and spring water comes from surface or underground spring.

The commodification of water is not only an issue in the United States. In the Atacama Desert of Chile, water is a vital part of daily agropastoral life. From 1973 to 1990, the Chilean military regime of the time began to develop institutional reforms that included the 1981 Water Code.¹⁷⁶ Under this water model, the national water agency, Direccion de Aguas, attempted to replace traditional communal water rights with privatization. In an arid region such as the Atacama, competition for these water rights became extreme with urban water supply companies, mining corporations, and rural Indigenous communities including the Aymara, Quechua, Colla and Diaguita Peoples vying for their share. The state was able to successfully privatize water in these communities, including the Aymara community of Quillagua and the city of Calama.¹⁷⁷ Surprisingly, however, scholars in the early 2000s found that private rights in these

¹⁷⁵ Bryan Swistock, "Understanding Bottled Water," *PennState Extension*, January 10, 2023, <https://extension.psu.edu/understanding-bottled-water>.

¹⁷⁶ Manuel Prieto, "Indigenous Resurgence, Identity Politics, and the Anticommodification of Nature: The Chilean Water Market and the Atacameño People," *Annals of the American Association of Geographers* 112, no. 2 (2022): 487-504.

¹⁷⁷ Prieto, "Indigenous Resurgence," 488.

areas were not flowing towards areas of highest economic value.¹⁷⁸ Instead, Atacamenos had collectively bought water rights and subsequently reinstated communal ownership. Later attempts to continue the privatization process by assigning individual water users specific volumes of water per unit of time ultimately failed due to pressure enacted by the Atacamenos.¹⁷⁹

In addition to bottling water for drinking, humans have also commodified water by harnessing its power to produce energy through hydropower. The idea of using water to perform work dates to thousands of years ago when the Egyptians and Greeks used it for purposes of irrigation and gristmills.¹⁸⁰ Today, hydropower dams can vary in size. For example, in mountainous regions, only a more limited infrastructure, micro-hydropower systems, may be possible. These are categorized as either high or low head, with the head referring to the vertical distance the water decreases at the hydropower site. With a “high head” it is easier to generate energy as the water produces more energy as it drops. These high head small hydropower plants are being developed all over the world, including in southern Chile.¹⁸¹ For example, on the Pilmaiken River the hydropower company Statkraft has three small-scale, high-head microhydropower projects, Rucatayo, Los Lagos, and Osorno.¹⁸² However, because their initial environmental impact assessment neglected the existence of the Mapuch-Williche Indigenous people in their study area, these projects have been rife with conflict. Likewise, on the Biobío River in Chile, hydropower continues to be controversial. The Ralco Dam project was authorized in 1997 and completed in 2004 by the Chilean company Endesa Chile.¹⁸³ The project led to the forced displacement of 97 Indigenous Pehuenche families and the flooding of ancestral territory, including a graveyard.¹⁸⁴

¹⁷⁸ Guillermo Donoso, “Estudio de Caso del Código de Aguas,” in *Mercados (de Derechos) de Agua: Experiencias y Propuestas en América del Sur*, ed. Guillermo Donoso, (CEPAL, 2004), 25-48.

¹⁷⁹ Prieto, “Indigenous Resurgence,” 491.

¹⁸⁰ “History of Hydropower,” U.S. Department of Energy, accessed July 16, 2025, <https://www.energy.gov/eere/water/history-hydropower>.

¹⁸¹ Sarah H. Kelly, “Megawatts Mask Impacts: Small Hydropower and Knowledge Politics in the Puelwillimapu, Southern Chile,” *Energy Research and Social Science* 54 (2019): 224-235.

¹⁸² Sarah H. Kelly, *Protecting the Pilmaiken* (The Energy Justice Clinic at Dartmouth, 2024).

¹⁸³ Kathleen L. McGinn et al., *Endesa Chile: Raising the Ralco Dam* (Harvard Business School, 2006).

¹⁸⁴ Monti Aguirre, “The Biobío River: A Lifeline Under Threat and the Fight to Protect It,” *International Rivers*, April 3, 2025, <https://www.internationalrivers.org/news/the-biobio-river-a-lifeline-under-threat-and-the-fight-to-protect-it/>.

More recently, the Rucalhue Hydroelectric Plant project on the Biobío River was acquired by China International Water and Electric (CWE), a subsidiary of the China Three Gorges Corporation.¹⁸⁵ The project has encountered constant opposition from Mapuche-Pehuenche Indigenous communities and environmental groups due to environmental threats, destruction of cultural heritage, violations of contract and a lack of meaningful dialogue from the corporation.¹⁸⁶ In 2025, armed men attacked the plant's construction site and set fire to trucks and equipment. Likewise, in central Chile's lake district near the cities of Pucón and Curarrehue, the Trancura River has also been the site of controversy. The Chilean government approved similar small-scale hydroelectric projects by the dozens, 59 total, on the Trancura River.¹⁸⁷ For instance, the Añihuerraqui run-of-river dam project by GTD Negocios is a US \$22 million investment project with estimated power potential of 9 megawatts that has divided the community after GTD went door to door offering each family 500 mil pesos for their support.¹⁸⁸

Thousands of miles from Chile in east Tennessee, commodification of water via hydropower is equally abundant. In 1933 the Tennessee Valley Authority Act was passed to provide flood control for the Tennessee River through hydropower dams which would simultaneously provide electricity to Tennessee and six surrounding states.¹⁸⁹ The construction of one such project, Norris Dam, began in 1933 and was completed in 1936 with two generating units on the Clinch River.¹⁹⁰ In addition to being responsible for the death of hundreds of construction workers, TVA dams flooded numerous towns. Norris Dam in particular flooded the town of Loyston, displacing numerous families.¹⁹¹ These projects also resulted in the disinterment of at least 4,871 Indigenous individuals whose remains were frequently given away to museums and universities.¹⁹² TVA structures and their subsequent failures are also responsible for

¹⁸⁵ María Elvira Ríos et al., "Rucalhue Hydroelectric Plant, Biobío Region," *Policy Paper ICLAC 2* (2023).

¹⁸⁶ Zhao Zhong, "Biobío River Update: What's Going on with the Rucalhue Hydropower Plant in Chile?" *Save the World's Rivers*, May 15, 2025,

<https://savetheworldsrivers.org/biobio-river-update-whats-going-on-with-the-rucalhue-hydropower-plant-in-chile/>.

¹⁸⁷ Tomás Moggia, "Trancura River: Mapuche Communities and Whitewater at Risk," *Patagon Journal* (2015).

¹⁸⁸ Moggia, "Trancura River."

¹⁸⁹ "Our History," Tennessee Valley Authority, accessed July 20, 2025, <https://www.tva.com/about-tva/our-history>.

¹⁹⁰ "Norris," Tennessee Valley Authority, accessed July 20, 2025, <https://www.tva.com/energy/our-power-system/hydroelectric/norris>.

¹⁹¹ "Lost Town of Loyston," Loyola University of Chicago Center for Urban Research and Learning, last updated 2025, <https://www.luc.edu/eminent-domain/siteessays/norristn/losttownloyston/#:~:text=The%20small%20town%20of%20Loyston,%2C%20homes%2C%20and%20even%20cemeteries>.

¹⁹² Eduardo Medina and April Rubin, "Remains of Nearly 5,000 Native Americans Will be Returned, U.S. Says," *The New York Times*, April 4, 2023.

industrial disasters of monumental scale including the Kingston TVA Coal Ash Spill in 2008 which resulted in significant environmental harm, worker exposure to radioactive materials, and subsequent death and deadly illnesses in hundreds of individuals who participated in the clean-up.¹⁹³

Commodities in these cases are vast and complex. Water clearly becomes a commodity in and of itself as it is bottled and sold in a market economy. The rivers from which the water originates are similarly commodified, as is access to their depths. In less apparent ways, the water's movement and fluid properties are also commodified as a means of producing energy through dams. And, in order to create these dams, the land through which these waters flow must also be bought and sold. The erection of these dams alters ancient flowing waters and creates reservoirs where there were once floodplains. Displaced human bodies even become commodities, traded among museums and universities who disregard provenance and repatriation.

Soil and Agriculture

In addition to water, the land and soil can also be commodified. Most broadly, agriculture can be defined as the process of cultivating the soil and land for the purpose of growing plants and raising livestock for both food and non-food production. For approximately 12,000 years since the Neolithic Revolution, humans have farmed the land, allowing them to build permanent settlements and civilizations.¹⁹⁴ Agriculture has also allowed for capitalistic society to thrive, commodifying every natural aspect of farming and ranching, including the soil, water, livestock animals, crop plants, and seeds. Beginning with the soil itself, farmers spend time and money on preparing the earth for maximum productive output. Heavy machinery and fertilizers must be purchased and laborers paid. Livelihoods depend on Earth itself. Likewise, knowledge of the importance of soil has existed for thousands of years. For example, scholars Jens Soentgen et al. describe how in lowland regions of the Amazon, terra pretas,

¹⁹³ Austyn Gaffney, "Hundreds of Workers Who Cleaned up the Country's Worst Coal Ash Spill are Now Sick and Dying," *Natural Resource Defence Council*, December 17, 2018, <https://www.nrdc.org/stories/hundreds-workers-who-cleaned-countrys-worst-coal-ash-spill-are-now-sick-and-dying>.

¹⁹⁴ John Carey, "Unearthing the Origins of Agriculture," *Proceedings of the National Academy of Sciences*, April 5, 2023, <https://www.pnas.org/doi/10.1073/pnas.2304407120>.

also called Amazonian dark earths, have been discovered.¹⁹⁵ These soils were likely made by Indigenous tribes between 2500 and 500 years ago. Unlike the reddish oxisols common in Amazonia, these soils are black in color with a high pH and nutrient content, specifically phosphorus, nitrogen, magnesium, and calcium. Their dark coloration stems from the incorporation of biochar, incompletely burned organic material. Additionally, terra pretas incorporate organic matter from human feces as well as pre-Columbian potsherds.¹⁹⁶ They are valuable, demonstrating lasting fertility for agriculture, especially important in Amazonian lowlands dominated by nutrient poor, acidic soils. It is thought that biochar creates an alkaline environment that allows microorganisms and nitrogen-fixing bacteria to thrive, thereby enhancing plant growth.¹⁹⁷ Historically, these soils depended on Indigenous traditional knowledge for creation. However, after it was proposed that terra preta could be reproduced as terra preta nova for use as a carbon sink in the 1990s, the commodification of these soils began. A Dutch soil scientist first outlined the idea that biochar could be incorporated into soils, thereby storing carbon dioxide as it is not easily mobilized as CO₂ or methane in charcoal form.¹⁹⁸ Since this time, terra preta has been reframed as a commodity and a reimagined version of it can be purchased at garden centers worldwide. In 2006, an International Biochar Initiative was even founded to help support the commercialization of biochar for the manufacture of dark earths.¹⁹⁹ This new commodity is decontextualized, commercialized, and can be produced anywhere in the world through technical processes.

Within the soil, farmers across the globe plant seeds. Up until the 20th century, the reproduction of these seeds was relatively unexplored terrain by agricultural capitalists due, primarily, to the fact that plants propagate themselves, making commodification difficult.²⁰⁰ However, throughout the last hundred years, this barrier has been overcome in several ways: through genetic engineering, hybridization, and

¹⁹⁵ Jens Soentgen et al., "Terra Preta de Índio: Commodification and Mythification of the Amazonian Dark Earths." *GAIA Ecological Perspectives for Science and Society* 26, no. 2 (2017): 136.

¹⁹⁶ Jago Jonathan Birk et al., "Faeces Deposition on Amazonian Anthrosols as Assessed from 5 β -stanols," *Journal of Archaeological Science* 38 (2011): 1209.

¹⁹⁷ Makoto Ogawa and Yasuyuki Okomori, "Pioneering Works in Biochar Research, Japan," *Australian Journal of Soil Research* 48, no. 7 (2010): 497.

¹⁹⁸ Wim Sombroek et al., "Amazonian Dark Earths as Carbon Stores and Sinks," *Interciencia* 17, no. 2 (1992): 269-272.

¹⁹⁹ Soentgen et al., "Terra Preta," 140.

²⁰⁰ Jack Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology* (University of Wisconsin Press, 2005).

intellectual property protections.²⁰¹ Plant hybridization, the crossing of two genetically distinct plants to produce an offspring with desirable traits, results in seeds with reduced vigor. This means they cannot reliably be re-planted to propagate the hybridized plant. Thus, hybridization provides a form of assurance to private companies that rely on selling plants to farmers each year. Additionally, in 1970, the Plant Variety Protection Act was passed into law in the United States, allowing companies to obtain legal ownership over seeds and new varieties of plants they developed.²⁰² In 1985, utility patents which provide exclusive rights over a plant variety for up to 20 years, were also extended to cover seeds. No longer were seeds held as resources of the commons; instead, they are now held as commodities to be bought and sold by a very limited number of private corporations. Commodity seeds are produced for and exchanged through markets and have become nearly ubiquitous since the proliferation of the seed industry.²⁰³ Proponents of the seed industry claim that it has allowed for extensive research and development, resulting in improved varieties and increased yields.²⁰⁴ Opponents of this system assert that it has resulted in homogenization of the food supply, dependence on genetic engineering, high levels of fertilizers and pesticides, and an oligopoly on the seed supply.²⁰⁵ Regardless, it is undeniable that four companies now control a 62% majority of proprietary seed sales, with seed companies, agri-chemical, and technology companies quickly merging.²⁰⁶ Only 40 years ago, in 1985, the top four companies accounted for only 8% of global commercial seed and agri-chemical markets.²⁰⁷ Thus, seeds are now externalized off the farm and most farmers in the Global North rely on commercially produced seeds for their endeavors.²⁰⁸ Seed saving has been disincentivized, constrained, and even made illegal under capitalism.

²⁰¹ Carina Isbell et al., "Seed Commodification and Contestation in US Farmer Seed Systems," *Renewable Agriculture and Food Systems* 39 (2024): 1.

²⁰² Phil Howard, "Intellectual Property and Consolidation in the Seed Industry," *Crop Science* 55, no. 6 (2015): 2489-2495.

²⁰³ Isbell et al., "Seed Commodification," 1.

²⁰⁴ Koen Deconinck, "New Evidence on Concentration in Seed Markets," *Global Food Security* 23 (2019): 135-138; Sylvie Bonny, "Corporate Concentration and Technological Change in the Global Seed Industry," *Sustainability* 9, no. 9 (2017): 1632.

²⁰⁵ Colin K. Khoury et al., "Crop Genetic Erosion: Understanding and Responding to Loss of Crop Diversity," *New Phytologist* 233, no. 1 (2022): 84; Rishipal Singh et al., "Impacts of Changing Climate and Climate Variability on Seed Production and Seed Industry," *Advances in Agronomy* 118 (2013): 49-110.

²⁰⁶ Phil Howard, "Recent Changes in the Global Seed Industry and Digital Agriculture Industries," last modified January 2023, <https://philhoward.net/2023/01/04/seed-digital/>.

²⁰⁷ Bonny, "Corporate Concentration," 1632.

²⁰⁸ Jack Kloppenburg, "Impeding Dispossession, Enabling Repossession: Biological Open Source and the Recovery of Seed Sovereignty," *Journal of Agrarian Change* 10, no. 3 (2010): 367-388.

In Bolivia the seed market still thrives despite the country's adoption of an extremely progressive constitution in 2009. Researchers Saurav Ghimire et al. describe how after the fall of Bolivia's neoliberal regime in 2003 and victory of Evo Morales' Movimiento al Socialismo in 2005, the country adopted a new constitution, lauded as a novel and radical development in terms of its advancement of the rights of humans and nature. The constitution upholds the concept of *vivir bien*, living well, based on indigenous traditional knowledge which promotes living in harmony with nature and non-human entities. Rather than allow for privatization, commodification, and the resulting dispossession of seeds, Bolivia has taken great strides to resist capitalism in regard to seeds and protections of farmers' rights. Their constitution guarantees the right to collective ownership of intellectual property, prioritizes food security and sovereignty, strictly regulates genetically modified organisms, and expressly prescribes the principle of non-commodification of environmental functions to Mother Earth. However, biological dispossession of seeds continues to occur in the agricultural sector of soybeans which are privatized under the Plant Variety Protection (PVP) law, explain Ghimire et al. This law allows plant breeders to retain rights to distinctive varieties of plants and activities related to their reproduction, propagation and sale for 20-25 years depending on species. Of the 60 plant varieties currently protected under PVP law, soybeans account for 66%, 40 plant varieties in total. Four companies dominate the market and farmers who wish to plant their varieties of soybeans must buy seeds from an authorized dealer. Individuals with more than 200 hectares of land must also pay a royalty fee to the seed company.²⁰⁹ They are also prohibited from gathering seeds from the plants in autumn unless they pay additional royalty fees which can be as high as 50% of estimated value of expected harvest.

From seeds sprout living organisms, plants of all varieties, which are then harvested for their parts: fruit, sap, flowers, leaves, and roots. For example, the oil palm, *Elaeis guineensis*, produces fruit that is gathered for the production of a range of commodities, including vegetable oil. The oil palm fruit has been eaten by humans for more than 7000 years. The plant is endemic to equatorial regions of west

²⁰⁹ Ghimire et al., "Bolivia's Resistance," 175-76.

Africa, however during the 19th century, seeds were introduced to modern day Indonesia and Malaysia.²¹⁰ Today, the vast majority of oil palm is farmed here. Two types of oil are harvested from the palm fruits: palm oil and palm kernel oil.²¹¹ Palm oil is extracted from the mesocarp tissue and is suitable for use as vegetable oil and cooking applications while palm kernel oil is derived from the endosperm tissue of the seed and is used in nonedible products such as soaps and cosmetics.²¹² Additionally, after oils are extracted, seeds, which are high in protein, are ground for the production of animal feeds. In 2019, it was estimated that the oil palm industry was worth approximately US \$60 billion annually, employing 6 million people directly and 11 million indirectly.²¹³ Studies estimate that about half of products sold in grocery stores contain a form of palm oil and that at least three billion people rely on palm oil as part of their diet.²¹⁴ As the global population increases, demand for these products will continue to rise and more and more land will be converted to oil palm plantations. From 2001 to 2016, for example, the expansion of oil palm plantations in Malaysia increased 2.5 fold and those in Indonesia increased 4.5-fold.²¹⁵ This expansion required new lands be prepared for planting, primarily through deforestation. Between 2000 and 2012, Malaysia lost 14.4% of its forests, the highest rate of deforestation in the world.²¹⁶ Similarly, between 2000 and 2010, Indonesia lost 15 million hectares of forests, 11% of which came from oil palm land conversion.²¹⁷ This expansion has come in the form of both smallholders and large corporations. Globally, 30-40% of palm oil is cultivated by smallholders who farm less than 50 ha of land and tend to supply products locally.²¹⁸ In southeast Asia, there are over 3 million of these farmers. Conversely, large multinational corporations are responsible for the majority of palm oil production and tend to be more

²¹⁰ Denis J. Murphy et al., "Oil Palm in the 2020s and Beyond: Challenges and Solutions," *CABI Agriculture and Bioscience* 2, no. 39 (2021): 1.

²¹¹ Denis Murphy, "Oil Palm Value Chain Management," in *The Oxford Handbook of Food, Water and Society*, ed. Tony Allan, Brendan Bromwich, Tony Colman and Martin Keulertz (Oxford University Press, 2018), 630-651.

²¹² Murphy et al., "Oil Palm in the 2020s," 2.

²¹³ Sowmya Kadandale et al., "The Palm Oil Industry and Noncommunicable Diseases," *Bull World Health Organization* 8, no. 97 (2018): 118-128.

²¹⁴ Murphy et al., "Oil Palm in the 2020s," 2.

²¹⁵ Yidi Xu et al., "Annual Oil Palm Plantation Maps in Malaysia and Indonesia from 2001 to 2016," *Earth System Science Data* 12, no. 2 (2020): 847-867.

²¹⁶ Carol Yong, *Deforestation Drivers and Human Rights in Malaysia* (Forest Peoples Programme, 2014).

²¹⁷ Sinan A. Abood et al., "Relative Contributions of the Logging, Fiber, Oil Palm, and Mining Industries to Forest Loss in Indonesia," *Conservation Letters* 8, no. 1 (2015): 58-67.

²¹⁸ Michael Euler et al., "Oil Palm Expansion Among Smallholder Farms in Sumatra, Indonesia," *Journal of Agricultural Economics* 67, no. 3 (2016): 658-676; Murphy et al., "Oil Palm in the 2020s," 4.

efficient, cover thousands of hectares, produce more environmental negative impacts, and control additional downstream industries in the palm oil supply chain.²¹⁹ Many of these larger stakeholders are part of the Roundtable on Sustainable Palm Oil (RSPO), an association that certifies oil palm plantations as sustainable. The RSPO certifies large scale monocultures as sustainable if they meet certain criteria such as leaving patches of forest intact or adopting a zero-burning policy, meaning they will not burn whole forests to clear land for monoculture plantations.²²⁰ The group asserts that palm oil is naturally sustainable because plants are a renewable resource. However, this is not the case as oil palm decreases biodiversity and available habitat, threatens critical species, destroys carbon sinks, fragments the landscape, increases temperatures and fire risk, and releases significant amounts of CO₂ into the atmosphere, all of which will be discussed in more detail in the next section.

Agriculture is not limited to growing plants; it includes both terrestrial and marine species, many of which may be unexpected. Aquaculture, in fact, represents the fastest growing food production sector in the world with over 330 species farmed, including amphibians, mollusks, fish, crustaceans, and reptiles.²²¹ Conversely, terrestrial animal production for food is limited to fewer species and takes significantly larger areas, comprising 80% of the planet's agricultural land.²²² Scholars Luisa Ribeiro and Luís Toledo describe that one important species in aquaculture is the North American bullfrog (*Aquarana catesbeiana*) and much of global production occurs in Brazil where it is estimated that approximately 400 tons of frogs are produced annually, amounting to US \$1.9 million.²²³ The North American bullfrog, the most farmed amphibian globally, is popular in aquaculture due to its large size, rapid growth, fleshy legs, and ease of handling. It's been exported to over forty countries and between 2010 and 2018, production increased 100%, Ribeiro and Toledo explain. The amphibian first arrived in Brazil in 1935 and its

²¹⁹ Janice Ser Huay Lee et al., "Environmental Impacts of Large-Scale Oil Palm Enterprise Exceed that of Smallholdings in Indonesia," *Conservation Letters* 7, no. 1 (2014): 25-33; Syafiq A. Razak et al., "Smallholdings with High Palm Yield also Support High Bird Species Richness and Diverse Feeding Guilds," *Environmental Research Letters* 15, no. 9 (2020): 094031

²²⁰ Oliver Pye, "Commodifying Sustainability: Development, Nature and Politics in the Palm Oil Industry," *World Development* 121 (2019): 219.

²²¹ Albert Tacon, "Trends in Aquaculture and Aquafeed Production: 2000-2017," *Reviews in Fisheries Science and Aquaculture* 28, no. 1 (2019): 1-14; Marc Metian et al., "Mapping Diversity of Species in Global Aquaculture," *Reviews in Aquaculture* 12, no.2 (2020): 1217-1230.

²²² Mario Herrero et al., "Livestock and the Environment: What Have We Learned in the Past Decade?" *Annual Review of Environment and Resources* 40, no. 1 (2015): 177-202.

²²³ Luisa P. Ribeiro and Luís Felipe Toledo, "An Overview of the Brazilian Frog Farming," *Aquaculture* 548 (2022): 737623.

propagation was encouraged by the Brazilian government. Today, the industry has been refined with suppliers, farmers, slaughterers, processors and traders composing the supply chain. Importantly, the rearing of frogs is also better understood. Production is broken into three phases with the first representing reproduction and egg laying through metamorphosis. Frogs begin life as tadpoles and metamorphosize into adult frogs, losing their tails and developing the ability to breath out of water. This process generally takes three to four months before stage two begins, representing growth into large adults. This is the most costly phase of production as frogs must be fed in order to increase weight.²²⁴ The last phase, slaughtering, involves stunning, desanguination, skin removal, and packaging. In 2019, approximately 390 tons of live bullfrogs were harvested to produce around 191 tons of meat, generating about U.S. \$1.9 million.²²⁵

As these examples demonstrate, agriculture produces an array of commodities, some expected and some more surprising. The Earth, its soil, and the variety of organisms that thrive in this environment are commodities, bought and sold in order to grow livestock and crops. Likewise, the bodies of these plants and animals are also commodities, living creatures raised for the sole purpose of consumption and profit. Even the reproductive strategies and genetics of these species are commodified. Fruiting bodies are sold as produce. Seeds are privatized and patented. The best bovine and ovine breeders are jostled around, farm to farm, inseminating as many sows and heifers as possible. In these cases, commodities abound and include plant varieties, more-than-human animal species, the soil, seeds, and the land as a whole.

Ecotourism

Ecotourism, like agriculture, is another form of commodification of nature and is defined as responsible travel to natural areas that serves to provide funding for conservation activities and sustain the wellbeing of local people.²²⁶ It is meant to be sustainable, ethical, and educational. Relying on the Earth, its flora and fauna, and its natural resources, ecotourism is inseparable from capitalism and

²²⁴ Carla Renata Moreira et al., "Frog Farms as Proposed in Agribusiness Aquaculture: Economic Viability Based in Feed Conversion," *Boletim do Instituto de Pesca* 39, no. 394 (2013): 389-399.

²²⁵ Ribeiro and Toledo, "Frog Farming," 737623.

²²⁶ "What is Ecotourism?" The International Ecotourism Society, last modified 2025, <https://ecotourism.org/what-is-ecotourism/>.

commodification. In the United States, the term ecotourism is nearly synonymous with the nation's state parks, national monuments, and national parks. National parks, in particular, charge entrance fees which, when combined with concessions and other souvenirs purchased in-park, generate millions of dollars in income for the National Park Service.²²⁷ With an annual budget in the billions, these parks place a monetary value on access to nature. In other parts of the world, ecotourism functions along similar lines. On the Balearic island of Mallorca in Spain, the private protected areas (PPAs) are a common form of the commodification of nature, social scientists Nora Müller et al. argue.²²⁸ Some of these PPAs in the Serra de Tramuntana mountain range are promoted as prime tourist destinations and are based on the idea that wilderness must be protected from humans while at the same time preserve nature for the former's enjoyment. Müller et al. describe how in 2007, Serra de Tramuntana was designated as an official Natural Site and in 2011 the area was also declared a UNESCO Cultural World Heritage site. Thus, while most of the region is privately owned, it is also open to the public. With increasing tourism pressure, the hotel and service industry has grown significantly since 2011 here. It has even been proposed that with increased tourism, there be created a "Serra de Tramuntana Brand," to be used by property managers, mountain guides, food producers, educators, hotels, local residents, and restaurants and bars.²²⁹

The branding of a physical, ecological, and cultural place for the purpose of ecotourism is by no means unique to Mallorca. In Kenya, the Maasai have become an emblem of the country, welcoming tourists to the nation. The Maasai People are a pastoralist, semi-nomadic Indigenous group living in modern-day Kenya and northern Tanzania. They are utilized by the Kenyan government in advertisements for the Kenyan Tourist Board and commercials by tour companies, explains professor of environmental justice, Bilal Butt.²³⁰ Romanticized visions of the Maasai, known for their bold, colorful clothing, work themselves into Westernized ideals of "Africa." Individuals from Maasai tribes are even hired to greet

²²⁷ Paul C. Sutton et al., "Valuing Our National Parks: An Ecological Economics Perspective," *Land (Basel)* 8, no. 4 (2019): 54.

²²⁸ Nora Müller, et al., "Tourism Commodification and Privatization of Nature: Private Protected Areas in the Serra de Tramuntana (Mallorca)," *Boletín de La Asociación de Geógrafos Españoles*, no. 99 (2023): 2.

²²⁹ Müller, et al., "Tourism Commodification," 17.

²³⁰ Bilal Butt, "Commodifying the Safari and Making Space for Conflict: Place, Identity and Parks in East Africa," *Political Geography* 31, no. 2 (2012): 107.

important visiting diplomats at the airport and entertain rich tourists on safari. The Maasai and the land on which they live have been commodified in this manner for the purposes of ecotourism. For example, in Kenya, the Maasai Mara National Reserve (MMNR) straddles the Kenya-Tanzania border, spanning 25,000 square km of Serengeti ecosystem.²³¹ The reserve is considered east Africa's most biodiverse region and, for this reason, it draws numerous tourists each year. Most famously, it offers visitors the opportunity to see the wildebeest migration. In 2025, it costs USD \$200 per person, per day to visit the reserve.²³² Camping and other options for staying in the park have additional associated costs. Dr. Butt explains that within the park, livestock grazing is prohibited.²³³ However, this has led to clashes among land managers, state government, and the Maasai. Prior to the arrival of Europeans, the Maasai lived as pastoralists, raising animals on the rangelands of eastern Africa for thousands of years. Pastoralists rely on moving their livestock to cope with environmental variability and resource gradients. As lands in Africa were colonized, often under the guise of state-owned protected areas, relationships among pastoralists and colonists became contested. Land managers came to view pastoralists as a threat to conservation and the revenue these areas generated, Butt explains. Historically, the Maasai inhabited land that is now part of the MMNR and many feel justified to access their ancestral land.²³⁴ Given that their image is used to lure tourists to Kenyan parks and reserves, this is understandable.

Similarly, the island nation of Madagascar off the eastern coast of Africa relies on Indigenous tribes to enhance their ecotourism industry. Formerly a French colony, it has been independent since 1960. Since 2002, Madagascar has operated with a clear interest towards opening the country to the English-speaking world through ecotourism in order to gain both economic and political power and support, explains professor of sociology, Dr. Rosaleen Duffy.²³⁵ For Madagascar, the main form of ecotourism stems from wildlife on the island which visitors can easily find by visiting parks, reserves,

²³¹ Butt, "Commodizing the Safari," 106.

²³² "Reserve Entry Fees and Park Rules 2024 & 2025," Masai Mara Travel, accessed August 20, 2025, <https://www.masaimara.travel/park-entry-fees.php>.

²³³ Butt, "Commodizing the Safari," 106.

²³⁴ Jan Bendler Shetler, *Imagining Serengeti: A History of Landscape Memory in Tanzania from Earliest Time to the Present* (Ohio University Press, 2007).

²³⁵ Rosaleen Duffy, "Neoliberalising Nature: Global Networks and Ecotourism Development in Madagascar," *Journal of Sustainable Tourism* 16, no. 3 (2008): 332.

beaches and by taking guided whale watching and scuba diving trips. Key markets for Madagascar's ecotourism market are the U.S., Canada, France, Germany, the United Kingdom, and Japan and the nation has found success in these arenas. For example, Duffy details how between 1990 and 2000, the number of visitor arrivals increased by 202%. Madagascar was also identified by the World Tourism Organisation in 2004 as one of the world's top emerging destinations. The following year, in 2005, the country generated USD \$5 million in tourism, most of which involved some form of ecotourism.²³⁶ Since the early 2000s, the nation has only continued to develop this sector with the World Bank funding a 15-year program for the environment which served to develop environmental and conservation policy in a form consistent with market-oriented economics.²³⁷ Thus, as in other countries, nature and economics are inextricably linked in Madagascar. Similarly, the actors involved, from NGOs to land managers to investors, form a complex network of entities, each with their own vested interest in ecotourism.

An equally complex ecotourism sector exists in Sumatra, an island of Indonesia. In the ecotourism center of Tangkahan, visitors can not only view wildlife; they can actually interact with living animals.²³⁸ Captured elephants, a lively commodity, are employed here to create value from multispecies encounters. Researchers Lubabun Ni'am et al. explain how visitors pay for the experience of bathing the elephants and trekking with them, activities which are mediated by trainers called mahouts.²³⁹ The elephants are brought to Tangkahan from the neighboring province of Aceh and are managed by the Conservation Response Unit (CRU). Some of the elephants are former conflict elephants, individuals that engaged in crop-raiding to feed themselves, causing damage, loss of income, and creating negative human-elephant interactions, describe Lubabun Ni'am et al. Other individual elephants have been born into captivity. Initially, this business model requires already domesticated elephants to train those that were once wild. Referred to as khoonkie elephants, Sumatra actually imported these domesticated

²³⁶ World Tourism Organization, *World Overview and Tourism Topics* (World Tourism Organization, 2006), <https://www.e-unwto.org/doi/pdf/10.18111/9789284412105>.

²³⁷ Duffy, "Neoliberalising Nature," 333.

²³⁸ Lubabun Ni'am et al., "Selling Captive Nature: Lively Commodification, Elephant Encounters, and the Production of Value in Sumatran Ecotourism, Indonesia," *Geoforum* 127 (2021): 162-170.

²³⁹ Ni'am et al., "Selling Captive Nature," 163.

elephants to help train their own. These animals have become inseparable from Tangkahan's ecotourism sector.

A region similarly dependent on wildlife for its ecotourism market is the eastern Yucatan peninsula in Cancun, Mexico. Although humans have inhabited the peninsula for at least 12,000 years, only recently, in the 1970s, did the Mexican government begin to develop the area as a tourist destination.²⁴⁰ Shortly after dealing with issues such as mosquitoes, sources of fresh water, and establishing telecommunications, Mexico began transforming Cancun into a resort, driven, in large part, by ecotourism, explains archaeologist and professor Sarah Kurnick.²⁴¹ Together with private investors, the government created multiple eco-archaeological parks aimed at presenting the natural and cultural abundance of the country. For example, the first of these parks was named after the archaeological site of Xcaret, a settlement occupied by the Maya from the Late Formative Period around 400 BCE through the colonial era. Today the park is visited by more than 1 million people each year, many of whom are drawn to the area by the resort's underground rivers, snorkeling, botanical gardens, and turtle and butterfly pavilions. Kurnick describes that ownership of the park is complex: while it is owned and controlled by private investors, it is also closely tied to the Mexican state. This is due to the fact that Xcaret includes archaeological structures and artifacts which, by law, are inalienable cultural patrimony of the Mexican nation-state, led by the National Institute of Anthropology and History.²⁴²

Likewise, parks in South America, find themselves confronting similar complexities due to the development of ecotourism. Such is the case in Patagonia in Argentina. In 1937, four national parks were established in the region, among them the Los Glaciares National Park (LGNP).²⁴³ However, even before the creation of the park, the land had long been a site of contestation, genocide, and forced removal of

²⁴⁰ Sarah Kurnick, "Creating Nature in the Yucatan Peninsula: Social Inequality and the Production of Eco-Archaeological Parks," *American Anthropologist* 121, no. 2 (2019): 381; Wolfgang Stinnesbeck et al., "The Earliest Settlers of Mesoamerica Date Back to the Late Pleistocene," *Plos One* 12, no. 8 (2017): e0183345.

²⁴¹ Michael R. Redclift, "Abandoned Spaces and the Myths of Place: Tourist Pioneers on Mexico's 'Mayan Riviera'," *Journal of Tourism Research* 2, no. 1 (2009): 4.

²⁴² Dylan J. Clark and David Anderson, "Past is Present: The Production and Consumption of Archaeological Legacies in Mexico," *Archaeological Papers of the American Anthropological Association* 25 (2015): 2; Kurnick, "Creating Nature," 382.

²⁴³ Sabrina Elizabeth Picone et al., "Territories for Conservation? Capitalist Strategies for Appropriating Nature in Los Glaciares National Park in the Argentinean Patagonia," in *Socio-Environmental Regimes and Local Visions*, ed. Minerva Arce Ibarra et al. (Springer International Publishing, 2020), 242.

Indigenous People. Researchers Sabrina Picone et al. describe how after the mass killing of Indigenous groups in Patagonia, a military action known as The Conquest of the Desert, the national government began to promote “settlement” by Europeans by granting occupancy permits for raising cattle and sheep.²⁴⁴ In 1980, however, the government enacted a law that banned all human activity in the park except tourism. Therefore, ranchers were encouraged to convert cattle ranches into lodges and other tourist destinations. Shortly thereafter, LGNP was recognized as a World Heritage Site by UNESCO in 1981, thereby attracting international attention to the region’s natural landscape. The park became well-known for the Perito Moreno Glacier, the Patagonia Steppe, the Magellanic Subpolar Forest, and the Patagonia Ice Field which includes the most important reservoir of drinking water on the continent.²⁴⁵ From the 1980s forward, ecotourism was heavily promoted and slowly transformed from a primarily educational and cultural activity to one based much more heavily on the economic development of Argentina.

Each of these cases demonstrates the complexity of commodification related to ecotourism. It is all encompassing. The Earth, the wild more-than-human species who thrive in her diversity of ecosystems, Indigenous Peoples, and romanticized images and notions of these “exotic” bodies are turned into unwitting commodities. Not only are more-than-human species and the land commodities; the entire process of producing, transforming, and allowing others to experience “Nature” is veritable commodification.

Hunting and Fishing

Related to ecotourism, hunting is understood as the anthropogenic practice of pursuing, stalking, seeking, capturing, and killing wildlife for the purposes of food, recreation, trophies, wildlife management and conservation, and removal of nuisance animals. The history of hunting is widely debated, but it is generally accepted that human ancestors, *Australopithecus*, *Homo erectus*, *Homo habilis*, and *Homo neanderthalensis* participated in some form of hunting in the Pliocene and Pleistocene periods which

²⁴⁴ Picone et al., “Territories for Conservation?” 243.

²⁴⁵ Picone et al., “Territories for Conservation?” 247.

lasted from around 5 million years ago to 12,000 years ago.²⁴⁶ The intensity of this hunting is a long-standing controversy, but it is quite certain that by the time of the emergence of *Homo sapiens* around 300,000 years ago, humans were hunting and using tools to do so.²⁴⁷ Between 100,000 and 10,000 years ago, other developments further contributed to increased hunting. Domestication of wolves allowed for hunting with dogs.²⁴⁸ Development of the bow and arrow, first seen in KwaZulu-Natal, South Africa, was also vital.²⁴⁹

Today, hunting persists although many humans are no longer dependent on the practice for survival. Like most everything in capitalistic society, hunting now commodifies animals. For example, in the same part of South Africa where the bow and arrow was developed, commodified wilderness and wildlife consumption now abound.²⁵⁰ Researchers Shirley Brooks et al., detail how following the release of Nelson Mandela from prison in the 1990s, South Africa began to market itself as a tourism destination, attracting international tourists interested in the safari and big-game experiences.²⁵¹ These experiences are provided by different entities including state-run protected areas and private lands. To satisfy the needs of international trophy hunters, large animals are actually farmed, primarily in the western region of KwaZulu-Natal province in an area known as the Midlands. This game farming is possible because in 2019, the South African government amended the Animal Improvement Act to reclassify 32 wild animal species as “farm animals.” These animals include 4 species of zebra, the giraffe, lion, cheetah, water buffalo, black and white rhinoceroses, 6 species of deer, cape buffalo, and multiple antelope species.²⁵² Wealthy travelers pay for the “African hunting experience,” which includes not only the actual animal they will kill, but also their stay at a hunting lodge, a knowledgeable guide, transportation, weapons, meals, and taxidermy services. Brooks et al. argue that as such, there is money to be made and many

²⁴⁶ Nikolaj Bichel and Adam Hart, “A History of Hunting and Hunting Perceptions,” in *Trophy Hunting* (Springer, 2023): 19-93.

²⁴⁷ Bichel and Hart, “History of Hunting,” 22.

²⁴⁸ Bichel and Hart, “History of Hunting,” 23.

²⁴⁹ Marilize Lombard and Laurel Phillipson, “Indications of Bow and Stone-Tipped Arrow Use 64,000 Years Ago in KwaZulu-Natal, South Africa,” *Antiquity* 84 (325): 635.

²⁵⁰ Shirley Brooks et al., “Creating a Commodified Wilderness: Tourism, Private Game Farming, and ‘Third Nature’ Landscapes in Kwazulu-Natal,” *Tijdschrift voor Economische en Sociale Geografie* 102, no. 3 (2011): 260.

²⁵¹ Brooks et al., “Commodified Wilderness,” 261.

²⁵² Animal Improvement Act, 1998 Regulations Relating to Amendment of Table 7 of the Regulation. Act No. 664 (2019), https://www.gov.za/sites/default/files/gcis_document/201905/42464gon664.pdf.

landowners in the Midlands are wealthy individuals who have bought up farms for use as private game reserves.²⁵³ However, there are also still struggling farmers on the land. These “farm dwellers” are seen as disrupting the integration of tourism. They have lived on this land since the late 19th century when the province was a British colony. Black residents on the eastern coast were forced out of these crowded coastal regions and onto homesteads in the west. They entered into agreements with white “landowners” that allowed them to live and farm cattle on this land in exchange for their labor, Brooks et al. describe. This system of labor tenancy became entrenched in the history of South Africa and persists today. Many of the Black, Zulu-speaking, and largely poor farmers are reluctant to leave the land, demonstrating that development of the hunting experience has certainly not been seamless.

Not all hunting is as blatantly capitalistic as in South Africa’s big game tourism industry. However, there are almost always transactional processes involved. In Sweden, for example, game species generate a range of valuable benefits including maintenance of ecosystem balance, recreation, and food, describe economists Katarina Elofsson and Justice Mensah.²⁵⁴ Recreational hunting is popular in Sweden with participants spending time and income on the activity. There are approximately 300,000 registered hunters who spend an average of 20 days a year hunting.²⁵⁵ To engage in this activity, participants must either own the land on which they hunt or lease this land from the landowner. Mensah and Elofsson explain that hunting market leases in Sweden can be long or short-term and their price varies by desirability of land. There are four primary species hunted: moose (*Alces alces*), fallow deer (*Dama dama*), roe deer (*Capreolus capreolus*), and wild boar (*Sus scrofa*).²⁵⁶ Based on their recent study, Mensah and Elofsson estimate that a fallow deer is worth approximately \$287-324 per animal and a wild boar is slightly less at \$279-290. This traditional method of individual hunters valuing an animal and either hunting on their own land or leasing land from others is known as allmoge hunting.²⁵⁷ Although it

²⁵³ Brooks et al., “Commodified Wilderness,” 262.

²⁵⁴ Justice Tei Mensah and Katarina Elofsson, “An Empirical Analysis of Hunting Lease Price and Value of Game in Sweden,” *Land Economics* 93, no. 2 (2017): 292.

²⁵⁵ Mattias Boman and Leif Mattsson, “The Hunting Value of Game in Sweden: Have Changes Occurred over Recent Decades?” *Scandinavian Journal of Forest Research* 27 (2012): 669.

²⁵⁶ Mensah and Elofsson, “Value of Game,” 294.

²⁵⁷ Erika Andersson Cederholm and Carina Sjöholm, “Commodification of Recreational Hunting in Sweden: Hunting Tourism Experiences as ‘Peculiar Goods,’” (paper presented at Nordic Tourism Symposium, Finland, September 27 2022).

involves commodification of the land and animals, it is more traditional, stewardship-oriented, and local than the alternative in which hunting is offered to visitors in Sweden. While most people in Nordic countries support allmoge hunting, commercialized versions of the practice are highly controversial and face resistance.²⁵⁸ Many see commercialized hunting as an unethical practice that drives the price of hunting leases up and allocates these rights to those with the most money rather than local community members.

Similarly, the practice of fishing is deeply embedded in human history. Humans have been eating fish and shellfish since at least 140,000 years ago.²⁵⁹ The oldest surviving fishing hooks date to 40,000 BC and were found in a cave in southeast Asia.²⁶⁰ In more modern times, humans have heavily commodified the fishing industry and animals involved. Like hunting, fishing can be done for purposes of food, recreation, trophies, and wildlife management. In the United States, in order to fish, one must purchase a license from the state in which they're fishing. 100% of these fees reportedly go directly toward conservation and restoration.²⁶¹ For example, in the Florida Keys, a 125-mile arc of islands in the southeast United States, fishing is a vital part of the economy for individual recreational anglers and larger commercial companies alike. In addition to the commercial fishing industry, recreationalists have many options for how to fish in this region. Deep-sea offshore fishing offers anglers the chance to fish in deep waters far from shore. Bridge or platform fishing from shore and wreck and reef fishing are also options on the islands. Popular sports fish are various species of bonefish, mackerel, grouper, snapper, permit, sailfish, tarpon, snook, drum, wahoo, seatrout, jack, pompano, sheepshead, dolphinfish, tuna, marlin, swordfish, mahi-mahi and others. Some anglers of these species spend large amounts of their income to participate in trophy fishing which often involves chartering a deepsea fishing trip or owning a

²⁵⁸ Cederholm and Sjöholm, "Recreational Hunting."

²⁵⁹ "Fishing from the Earliest Times: A Very Brief History," British Library, last modified June 16, 2015, <https://blogs.bl.uk/science/2015/06/fishing-from-the-earliest-times.html>.

²⁶⁰ Sue O'Connor et al., "Pelagic Fishing at 42,000 Years Before the Present and the Maritime Skills of Modern Humans," *Science* 334, no. 6059 (2011): 1117-1121.

²⁶¹ "Purchase a Fishing License," U.S. Fish and Wildlife Service, accessed August 12, 2025, <https://www.fws.gov/initiative/fishing/purchase-fishing-license>.

boat. These individuals attempt to catch the largest individual of a given species in order to set a record certified by a central authority.²⁶²

The largest trophy fishing organization with said authority is the International Game Fishing Association (IGFA). One of their primary functions is to certify official world record sizes of fish. Anglers in the Florida Keys and elsewhere must take their fish to shore in order to be certified, effectively precluding catch and release, especially for pelagic species. The number of participants of this type of fishing is growing in the Florida Keys and has been since the 1960's.²⁶³ This has resulted in severely overfished populations, as well as commercial and recreational declines in biomass and shifts in the species composition of catches, argues Professor of Ocean History and Sustainability, Dr. Loren McClenachan.²⁶⁴ The fish being caught today are smaller than those caught 50 years ago. McClenachan's recent research finds that between 1956 and 2007, mean fish size declined in the Florida Keys from 19.9 kg to 2.3 kg, a drastic change. One may expect that a reduction in the size of fish caught would affect either the price paid per deep sea fishing charter or the number of anglers who purchase these experiences, but this is not the case. Adjusting for inflation, the cost of deep sea fishing expeditions have remained relatively stable and the number participating in fishing has increased. Essentially, people are paying the same amount for a less-valuable product.

Fishing also occurs in freshwater on lakes, streams, rivers, and reservoirs. An ancient dweller in some of these lacustrine environments in the southeast United States is the paddlefish. The paddlefish evolved long before the dinosaurs roamed the earth, around 300 million years ago. They can live over 60 years, grow to 7 feet long, and share certain characteristics with sharks, including an electro-sensory system in their rostrum that allows them to detect electrical fields created by populations of zooplankton, their food of choice.²⁶⁵ The commodification of paddlefish goes hand in hand with the stock crash of Eurasian sturgeon in 1991. These sturgeon had previously been the primary supplier of roe, or caviar, to

²⁶² D.S. Shiffman et al., "Trophy Fishing for Species Threatened with Extinction: A Way Forward Building on a History of Conservation," *Marine Policy* 50, no. 1 (2014): 318.

²⁶³ Loren McClenachan, "Documenting Loss of Large Trophy Fish from the Florida Keys with Historical Photographs," *Conservation Biology* 23, no. 3 (2009): 637.

²⁶⁴ McClenachan, "Trophy Fish," 637.

²⁶⁵ "Paddlefish," Tennessee Aquarium, accessed August 20, 2025, <https://tnaqua.org/animal/paddlefish/>.

wholesalers in Europe and Asia. When many died in a single year, commercial fishers in Tennessee began to be paid as much as \$200/kg for unprocessed paddlefish eggs, a scarce luxury commodity.²⁶⁶ Up until this point, the commercial fisher for paddlefish in the Tennessee River where the species thrived was largely unregulated, explain fisheries biologists Phillip Bettoli et al.²⁶⁷ However, since this time, it became clear that stricter regulations would need to be enacted: Between 2001 and 2005, more than 17,000 kg of paddlefish eggs were exported from the United States and in 2002, three Tennessee wholesalers were successfully prosecuted for violations of the Lacey Act after more than 3500 kg of illegally obtained paddlefish roe was seized. As one of the largest exporters of paddlefish roe, Tennessee fishers were highly scrutinized, and the U.S. Fish and Wildlife Service requested the Tennessee Cooperative Fishery Research Unit perform a stock assessment of paddlefish. The report found that between 2000 and 2002, paddlefish annual harvest dropped 60%, signalling overfishing. Specifically, Bettoli et al. find that paddlefish populations experienced growth overfishing in which fish were harvested before being allowed to reach their full growth potential, as well as recruitment overfishing in which adult stock are overfished to the point that they do not have the reproductive capacity to replenish themselves. After initial attempts to implement stricter regulations on the paddlefish industry in Tennessee were met with resistance in 2007, eventually the Tennessee Wildlife Resources Agency was successful in enacting change in 2014. Since this time, minimum harvest size limits have been increased, the fishing season has been shortened, and there is now a limited entry system for commercial fisherpeople.²⁶⁸

In all of these examples, wild, more-than-human bodies become commodities. There are, of course, ethical and substantive ways to engage in the activities of hunting and fishing without fully participating in capitalism. However, it is important to remember that the taking of these bodies by humans for personal gain can become exploitative when done in excess. There is a difference between feeding one's family and enjoying time spent outside and trying to get rich off the bodies of others.

²⁶⁶ "Paddlefish Stock Assessments Drive Regulation Changes in Tennessee," Wildlife Management Institute, last modified 2015, <https://wildlifemanagement.institute/outdoor-news-bulletin/may-2015/paddlefish-stock-assessments-drive-regulation-changes-tennessee>.

²⁶⁷ Phillip W. Bettoli et al., "Protecting Paddlefish from Overfishing: A Case History of Research and Regulatory Process," *Fisheries* 32, no. 8 (2007): 390.

²⁶⁸ "Paddlefish Stock Assessments Drive Regulation Changes in Tennessee."

Wild Species Trade

Tangentially related to the commercialization of fishing and hunting is the international trade in wildlife species. The trade in living animals and plants occurs both legally and illegally across the globe. Legal trade is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES is an agreement among countries that was officially adopted in 1975 by 80 countries, including the United States. Its stated goal is to ensure that the international trade in specimens of wild animals and plants does not threaten the survival of those species.²⁶⁹ CITES works by subjecting international trade of selected species to a licensing system that must authorize import and export of said species which are listed on CITES appendices.²⁷⁰ There are three CITES appendices. Appendix I includes species threatened with extinction for which trade is not permitted except in exceptional circumstances. Appendix II includes species that are not threatened with extinction, but for which trade must be carefully controlled to protect survival. Lastly, appendix III contains species that are protected in at least one country which has asked for assistance in controlling trade. Between 2011 and 2020, CITES reported that 1.5 billion individuals representing 12,023 species were traded.²⁷¹ CITES estimates that these trades represented a value of approximately USD \$11.1 billion annually. Many more individuals and species that are not listed on CITES appendices are traded each year. Furthermore, rampant illegal trade in species occurs globally.²⁷² The UN estimates that illegal wildlife trade generates up to US \$23 billion annually.²⁷³

In Asia, a major species in the illegal animal trade is the Asian small-clawed otter (*Aonyx cinereus*) which is widely distributed in coastal, riparian, and wetland habitats.²⁷⁴ The otter has been listed by the International Union for Conservation of Nature and Natural Resources (IUCN) as vulnerable since 2008.²⁷⁵ Nevertheless, the small-clawed otter has been traded extensively. From the 1980s to early 2010s,

²⁶⁹ "What is CITES?" CITES, accessed August 21, 2025, <https://cites.org/eng/disc/what.php>.

²⁷⁰ "How CITES Works," accessed August 21, 2025, <https://cites.org/eng/disc/how.php>.

²⁷¹ *World Wildlife Trade Report* (CITES Secretariat, 2022), 6.

²⁷² David W. Macdonald et al., "Trading Animal Lives; Ten Tricky Issues on the Road to Protecting Commodified Wild Animals," *Bioscience* 71, no. 8 (2021): 848.

²⁷³ United Nation Office on Drugs and Crime, *World Wildlife Crime Report: Trafficking in Protected Species* (UN Office on Drugs and Crime, 2020), 134.

²⁷⁴ Wanlop Chutipong et al., "Current distribution and Conservation Status of Small Carnivores in Thailand: A Baseline Review," *Small Carnivore Conservation* 51 (2014): 96-136.

²⁷⁵ L. Wright et al., *Aonyx cinereus*. *The IUCN Red List of Threatened Species 2021* (IUCN, 2021), e.T44166A164580923.

seizure records indicate that the otters were traded among 15 Asian countries, primarily in China, India, and Nepal.²⁷⁶ However, more recently, Japan has become a major importer of live pet otters in southeast Asia with most individuals originating in Thailand and Indonesia.²⁷⁷ Between 1998 and 2018, over 100 Asian small-clawed otters were seized at Japanese and Taiwanese airports alone.²⁷⁸ However, according to CITES, there have been no imports of the otter from Thailand to Japan since 1988.²⁷⁹ In Japan, domestic trade of the otters is ostensibly controlled under the Law for the Conservation of Endangered Species of Wild Fauna and Flora after the Japanese government declared that the species would be designated as an International Endangered Species in 2019.²⁸⁰ International trade is regulated by Japan's Foreign Exchange and Foreign Trade Act and Customs Law which prohibit individuals from importing the Asian small-clawed otter except under specific circumstances. This is because in 2019, the otter was moved from Appendix II to Appendix I of CITES, limiting its trade to exceptional circumstances only.²⁸¹ However, these otters continue to be some of the most popular animals in Japan, driven largely by social media trends and otter cafes.²⁸² Otter cafes are part of a network of exotic animal cafes which offer customers the opportunity to view and/or interact with animals. The number of these cafes has grown exponentially in Japan since 2004 and there are currently at least 137 active cafes housing 419 different species.²⁸³ Among these, the small-clawed otter is extremely popular with some cafes even selling animals to other buyers for prices over US \$10,000.²⁸⁴ Such demand for the species has turned Japan into a hotspot for otter importation. Similarly, social media content of pet otters in Japan has driven demand further

²⁷⁶ Lalita Gomez et al., *Illegal Otter Trade: An Analysis of Seizures in Selected Asian Countries (1980-2015)* (TRAFFIC, 2016): 1-32.

²⁷⁷ Lalita Gomez and Jamie Bouhuys, *Illegal Otter Trade in Southeast Asia* (TRAFFIC, 2018): 16; Tomomi Kitade and Yui Naruse, *Otter Alert: A Rapid Assessment of Illegal Trade and Booming Demand in Japan* (TRAFFIC, 2018).

²⁷⁸ Kitade and Naruse, *Otter Alert*.

²⁷⁹ Mayako Fujihara et al., "Tracing of the Geographical Origin of Captive Asian Small-Clawed Otters in Japan," *Conservation Science and Practice* 7 (2025): e70010.

²⁸⁰ Okamoto et al., "Pet Otters in Japan," 72.

²⁸¹ Yumiko Okamoto et al., "The Current State of Regulation of Asian Small-Clawed Otters *Aonyx cinereus* in Japan," *IUCN Otter Specialist Group Bulletin* 41, no. 1 (2024): 4.

²⁸² Yumiko Okamoto et al., "The Situation of Pet Owners in Japan - Warning by Vets," *IUCN Otter Specialist Group Bulletin* 37, no. 2 (2020): 71.

²⁸³ Marie Sigaud et al., "Exotic Animal Cafes in Japan: A New Fashion with Potential Implication for Biodiversity, Global Health, and Animal Welfare," *Conservation Science and Practice* 5, no. 2 (2023): e12867.

²⁸⁴ R. Nuwer, "These Otters are Popular Pets in Asia. That May be Their Undoing," *The New York Times*, April 22, 2019.

upwards. For example, since 2018, a channel that regularly features two pet otters in Japan has accumulated over 1.8 million subscribers and untold profits for the human account holders.

The internet, more broadly, also serves as a direct and indirect stage for the trade in wildlife. Social media platforms like Facebook and Instagram, as well as seller sites like Ebay and Amazon allow for the direct sale of otters via advertising, sourcing, and online trading.²⁸⁵ Social media sites including Instagram, Youtube, Tiktok, Pinterest and Facebook also act as an indirect platform for the spread of viral exotic pet videos with comments and likes that entice others to acquire these wild animals.²⁸⁶ These novel hybrid marketplaces increase and enhance accessibility to wildlife trade at unprecedented levels.²⁸⁷ Despite trade regulations, high prices and high demand continue to drive international trade of otters, notably between Thailand and Japan. Researchers have used DNA analyses to ascertain the geographic region of origin of Japanese pet otters, tracing their mitochondrial DNA to populations in southern Thailand, an area known for its otter poaching.²⁸⁸ These scholars find that even Japanese zoos and aquariums have admitted to purchasing otters illegally from animal dealers. With no domestic registration system or husbandry guidelines for pet otters in Japan, it is unclear how this market will continue to develop and at what cost.

As in the case of hunting and fishing, the trade in wild species transforms the bodies of living organisms into commodities. However, in this case, these bodies are forcibly taken from their natural environment and made to live in foreign, inhospitable, artificial places. These bodies are still living and that makes the commodification all the more worse.

Pharmaceutical Industry

In addition to the trade in wildlife, the pharmaceutical industry represents a major form of the commodification of nature. For thousands of years, humans have used plants, animals, bacteria, and fungi

²⁸⁵ Pethai Siriwat and Vincent Nijman, "Illegal Pet Trade on Social Media as an Emerging Impediment to Conservation of Asian Otter Species," *Journal of Asia-Pacific Biodiversity* 11 (2018): 470.

²⁸⁶ Siriwat and Nijman, "Illegal Pet Trade," 469-70.

²⁸⁷ Anita Lavorgna, "The Social Organization of Pet Trafficking in Cyberspace," *European Journal on Criminal Policy and Research*, 21, no. 3 (2015).

²⁸⁸ Fujihara et al., "Otters in Japan," 6.

for the purpose of producing medical substances.²⁸⁹ These natural products are sources of bioactive compounds and metabolites essential for pharmaceutical drug production.²⁹⁰ Fossil records date the first human use of plants as medicine to the Middle Paleolithic ages, 60,000 years ago.²⁹¹ The oldest written evidence of this usage is on a 5000 year old Sumerian clay slab from Nagpur, India which includes 12 recipes for drug preparation with over 250 plants referenced.²⁹² Holy books such as the Vedas, Bible, and Talmud all cite various rituals and treatments involving natural products with healing powers. Fathers of medicine, Hippocrates, Theophrast, Celsus, and Dioscorides wrote extensively about the use of plants as pharmaceuticals from around 400 BCE through 100 AD.²⁹³ Today, it is estimated that 80% of the world's population incorporate drugs with primary active compounds derived from nature into their health routines.²⁹⁴ The most important of these drugs belong to the realm of ethnopharmacopoeia as much of the original development and traditional knowledge of these substances has been derived from Indigenous medicinal systems, explain researchers Shalina Mehta and Dinesh Kumar. Ethnopharmacology is, thus, an approach to drug discovery that involves the observation, description, and experimental investigation of drugs used by Indigenous Peoples and said drugs' biologic activities. Mehta and Kumar assert that the source of this knowledge and its origin has been largely ignored by modern medicine and pharmaceutical industries.

For example, the Madagascar periwinkle (*Catharanthus roseus*) is a small perennial shrub native to the island nation of Madagascar. After the discovery of insulin at the beginning of the 20th century, researchers soon realized the drug was not 100% effective. In studies of insulin alternatives, leaves of the Madagascar periwinkle were tested in the 1950s and although they were not very effective at lowering

²⁸⁹ Nouredine Chaachouay and Lahcen Zidane, "Plant-Derived Natural Products: A Source for Drug Discovery and Development," *Drugs and Drug Candidates* 3, no. 1 (2024): 184.

²⁹⁰ Muhammad Ahmad et al., "Plant and Marine-Derived Natural Products: Sustainable Pathways for Future Drug Discovery and Therapeutic Development," *Frontiers in Pharmacology* 6, no. 15 (2025): 1497668.

²⁹¹ Daniel S. Fabricant and Norman R. Farnsworth, "The Value of Plants Used in Traditional Medicine for Drug Discovery," *Environmental Health Perspectives*, 109, no. 1 (2001): 69.

²⁹² Biljana Bauer Petrovska, "Historical Review of Medicinal Plants' Usage," *Pharmacognosy Reviews* 6, no. 11 (2012): 1.

²⁹³ Petrovska, "Medicinal Plants," 2.

²⁹⁴ Shalina Mehta and Dinesh Kumar, "Chronicles of Exploitations: Practice and Practitioners of Ethnomedicine," in *Quagmire of Market Dynamics of Pharmacopoeia*, ed. Sunita Reddy, Nemthianngai Guite and Bamdev Subedi (Springer Nature Singapore, 2023), 77.

blood sugar levels in animal test subjects, they did dramatically reduce white blood cell count.²⁹⁵ The biologic compounds responsible for this effect are the alkaloids vincristine and vinblastine.²⁹⁶ Because cancers such as leukemia involve the proliferation of white blood cells, these compounds were rapidly developed as chemotherapeutic agents for the cancer treatment and received U.S. FDA approval in the 1960s. Vincristine has since been used to treat childhood acute lymphoblastic leukemia and non-Hodgkin lymphomas, significantly increasing survival rates.²⁹⁷ Similarly, vinblastine is used to inhibit cell division in patients with testicular, breast, lung, bladder, ovarian cancers. And, although the commodification of the Madagascar periwinkle for pharmaceutical purposes is a relatively recent development, the plant has been used in traditional medicine for centuries. As the periwinkle spread over the globe, different peoples used it for an extremely large breadth of maladies including diabetes, asthma, high blood pressure, memory loss, dysentery, skin infection, insect stings, malaria, dengue fever, menstrual cramps, abscesses, cancer, cough, sexuality disorders, indigestion, congestion, ulcers, and intestinal parasites.²⁹⁸

Today, the periwinkle is cultivated, collected, and processed in areas of Madagascar, primarily across the island's southern tier. The majority is still sourced from Malagasy peasants who harvest the plant in the wild or farm it on small plots. Unlike other crops, the periwinkle thrives in sandy, lateritic soil with little water, making it profitable in Madagascar's littoral region. Scholar and researcher Benjamin Neimark describes how thousands of Malagasy peasants take on the production of the valuable plant, mostly without mechanized technology or machinery.²⁹⁹ The plant's roots and leaves are typically harvested in the rainy season from November to April and there are generally three to four harvests annually. Because the plant is susceptible to rot, post-harvest drying and sorting is required and is typically completed by rural workers at their own homes. After drying, workers, many of whom are older

²⁹⁵ "Vinblastine and Vincristine: Life-Saving Drugs from a Periwinkle," *John Innes Centre*, March 28, 2018, <https://www.jic.ac.uk/blog/vinblastine-and-vincristine-life-saving-drugs-from-a-periwinkle/>.

²⁹⁶ "Catharanthus roseus," *Plants for a Future*, last modified 2025, <https://pfaf.org/user/Plant.aspx?LatinName=catharanthus+roseus#:~:text=The%20dried%20root%20is%20an,to%20treat%20dysmenorrhoea%5B%20299%20%5D>.

²⁹⁷ "Vinblastine and Vincristine."

²⁹⁸ Sunil Kumar et al., "Catharanthus roseus (L.) G. Don: A Review of its Ethnobotany, Phytochemistry, Ethnopharmacology and Toxicities," *Journal of Ethnopharmacology* 284 (2022): 3.

²⁹⁹ Benjamin Neimark, "Green Grabbing at the 'Pharm' Gate: Rosy Periwinkle Production in Southern Madagascar," *The Journal of Peasant Studies* 39, no. 2 (2012): 424-429.

women, carry the periwinkle to markets or kiosks along roads in order to sell the product to firm representatives, market brokers, or collectors. Kiosks are built by firms along main roads to facilitate access to a point of sale by workers in remote areas. Market brokers are hired employees of drug firms that set up scales for selling periwinkle at local markets and who receive a percentage of their total sales. Similarly, Neimark explains, collectors act as middle persons between drug companies and producers, but are salaried, may either work independently or as drug firm employees and do not get a percentage of what they sell. They negotiate the price, weigh the periwinkle and check its quality. In addition to Malagasy workers, drug companies frequently employ laborers and contract out-growers to supplement their periwinkle yield. Out-growers are independent employees who are given basic materials and plots of land by the drug company on which they grow and harvest periwinkle for which they are guaranteed a market. Laborers work directly for the drug companies and are paid a daily wage to grow periwinkle on cultivated plots where firms can experiment with a variety of growing techniques, insecticides, fertilizers, varieties and irrigation. Dried periwinkle is exported to Europe and the United States where it is used to make chemotherapy and other drugs. At these facilities, it can take up to one ton of dried leaves to isolate a single ounce of vincristine and up to 15 tons to produce an ounce of vinblastine.³⁰⁰ One gram of these compounds is enough for 6 weeks of cancer treatment for one individual; an ounce supplies about 168 weeks of treatment.

Similarly, two other species experiencing such capitalistic commodification by humans are the parasitic caterpillar fungus (*Ophiocordyceps sinensis*) and its larval host, Thitarodes caterpillars which hatch as ghost moths in the *Hepialidae* family. The caterpillar fungus, referred to as Yartsa gunbu or bu, requires a host for survival. When the larva is young, it can become infected with the fungus. Initially, the hyphae of the mycelium develop inside the caterpillar, feeding on non-vital parts. The fungus does not kill its host immediately because it needs to both grow and wait for the insect to bury itself underground when it pupates. Amazingly, infected larvae have been shown to bury themselves at shallower soil depths than non-infected, suggesting that the fungus can somehow force its host into this position which is more

³⁰⁰ Neimark, "Green Grabbing," 430.

favorable for its own survival.³⁰¹ After the caterpillar has gone underground, the fungus completely takes over, killing the host, but still living in the desiccated shell of its body. In the spring, the fruiting body of the fungus develops out of the head of the caterpillar's exoskeleton, reaching up to 15 cm in length.

The native range of *O. sinensis* spans Bhutan, Nepal, Tibet, and Indian and is extremely prevalent on the Tibetan Plateau where it grows at altitudes between 3,000 and 5,000 meters where there is an annual rainfall of at least 350 mm.³⁰² Unlike most commercially harvested fungus, *O. sinensis* does not grow in forested areas, preferring pastoral habitat. As forests have been replaced with pastures in areas of the Tibetan Plateau, the range of the fungus has expanded, explains author Daniel Winkler. This is of great importance in both Tibet and China as the fungus has long been used in traditional Chinese medicine. The earliest known documentation of the use of yartsa gunbu is by a Tibetan physician who lived from 1439 to 1475. The caterpillar fungus is typically used as a tonic to treat exhaustion, asthma, tuberculosis, cardiovascular disease, back pain, and problems related to virility. More recently, bu has been recommended as a tonic for boosting immunity, eyesight, and virility, and as a treatment for kidney, lung, and heart problems and hepatitis B. Winkler concludes that due to its medicinal value, yartsa gunbu has been actively collected on the Tibetan Plateau since at least the 17th century.³⁰³ The region is situated administratively in the Tibet Autonomous Region and the autonomous prefectures of Sichuan, Yunnan, Qinghai, and Gansu provinces. The collection season occurs in April through July depending on elevation; higher slopes tend to see fruiting bodies later in the summer than lower altitudes. Collectors are mostly herders and farmers and, because the pasture land is owned by the Tibetan government, they are permitted to access the land without conflict arising among private landowners. Bu is widely dispersed and very difficult to see in the soil. Thus, most collectors use a small hoe or knife to dig gently into the ground. Winkler explains that a typical daily harvest can range from a few specimens to several dozen. Most counties in Tibet require local residents to have collecting permits which are generally much less

³⁰¹ Daniel Winkler, "Yartsa Gunbu (*Cordyceps Sinensis*) and the Fungal Commodification of Tibet's Rural Economy," *Economic Botany* 62, no. 3 (2008): 294.

³⁰² Kondapalli Vamsi Krishna et al., "Conservation of Endangered *Cordyceps sinensis* Through Artificial Cultivation Strategies of *C. militaris*, an Alternate," *Molecular Biotechnology* 67, no. 4 (2025): 1382; Winkler, "Yartsa Gunbu," 295.

³⁰³ Winkler, "Yartsa Gunbu," 298.

expensive than permits required by outsiders. These costs to collectors are recouped quickly due to the value of the caterpillar fungus.

O. sinensis is easily the most profitable mushroom on the Tibetan Plateau. Access to grasslands, knowledge about bu, and low cost for participation make bu collection highly profitable and accessible for locals. Winkler details how, in 2006, retail prices for top quality bu reached U.S. \$32,000 per kg in China and San Francisco. In 2004, a single bu was worth about U.S. \$2 to collectors. In the same year, approximately 50,000 kg of bu was collected, amounting to millions of dollars of profit distributed across Tibet's rural population. Data from core production areas at the time demonstrate that yartsa gunbu accounted for between 53 and 100% of total per capita annual income for collectors.³⁰⁴ The increasing value of the caterpillar fungus has increased the number of collectors as well as the price of bu. A more recent study by Amrita Laha et al. demonstrates the increased competition among bu collectors in Himalayan villages and the decline in individual harvest.³⁰⁵ However, because the value of bu continues to climb, from 2009 to 2017, the commodity still comprised 60-78% of annual household income for collectors who can choose to sell bu in different ways. Some sell immediately at camps established where collecting occurs. By doing so, they forgo 10-30% of profit they could receive if they waited and sold to larger brokers in towns. The practice of collecting and selling *O. sinensis* has brought money to poor, rural Tibetans, allowing them to purchase small motorized vehicles and other goods as well as pay for school fees, hospital bills, and taxes, describes Winkler. However, driven by market demand and ecological and sustainability concerns, there is a recent shift toward sustainable artificial cultivation methods for *O. sinensis* which may alter and even threaten bu collectors' livelihoods.³⁰⁶ In these cases, that which is commodified is the more-than-human species gathered for medicinal purposes, the land required to grow or access these species, and the traditional knowledge manipulated and exploited for commercial gain.

³⁰⁴ Winkler, "Yartsa Gunbu," 299.

³⁰⁵ Amrita Laha et al., "Earning a Livelihood from Himalayan Caterpillar Fungus in Kumaon Himalaya: Opportunities, Uncertainties, and Implications," *Mountain Research and Development* 38, no. 4 (2018): 323-331.

³⁰⁶ Krishna et al., "Endangered Cordyceps," 1382.

Landfills

Like medicinal more-than-human species, commodification of the Earth's land, specifically the upper crust of the planet, comes in the form of waste disposal via landfills. Landfills have been built and used by humans for thousands of years with the first in the western world dating to around 3,000 BC in Crete. By 500 BC, the Greeks had organized refuse disposal via municipal dumps; however, as Europe and the United States developed, waste management initially seemed to be largely ignored, explains professor of engineering Garrick Louis.³⁰⁷ In some cases in colonial America, food waste was fed to animals, manure and feces were used as fertilizers, and other wastes were deposited in bodies of water, burned, or dumped on unused land. However, in cities in the United States, poor sanitation and absence of waste management became a significant issue in the 1770s as streets reeked, water was polluted, and disease epidemics spread. As the populations of cities continued to grow, these issues only worsened. Louis describes that as late as the 1890's these issues persisted and recurrent epidemics forced public health improvements. While initial efforts focused on sewage and water treatment, public attention turned to solid waste management in the 1880s when local municipalities became responsible for the waste disposal of their citizens. Following the example set by George Waring in New York City, municipalities created dumps as well as refuse collection, transportation, and disposal. Later, in 1976, the Resource Conservation and Recovery Act defined municipal solid waste management anew, forcing the closure of open dumps nationwide and requiring more thorough regional planning.³⁰⁸ The subsequent garbage crisis resulted in the increase of private companies that managed waste disposal. Today, sanitary landfilling remains the generally accepted method for waste management, favored over composting and incineration.³⁰⁹ This option is popular because it is relatively inexpensive and has low-technical requirements. Rather than simply dumping waste, sanitary landfilling entails a controlled operation

³⁰⁷ Garrick E. Louis, "A Historical Context of Municipal Solid Waste Management in the United States," *Waste Management and Research* 22, no. 4 (2004): 306.

³⁰⁸ Resource Conservation and Recovery Act, Pub. L. No. 94-580, 90 Stat. 2795, (1976), <https://www.govinfo.gov/content/pkg/STATUTE-90/pdf/STATUTE-90-Pg2795.pdf>.

³⁰⁹ Magdalena Daria Vaverkova, "Landfill Impacts on the Environment," *Geosciences* 9, no. 10 (2019): 431.

through which waste is deposited in an engineered structure in compacted layers separated by soil. These landfills include bottom liners, final covers, and leachate collection and removal systems.³¹⁰

In North Carolina, for example, the largest landfill is the Sampson County Landfill in Roseboro near the historically Black neighborhood of Snow Hill. Spanning over 1300 acres, it's a repository for traditional municipal solid waste as well as a variety of other refuse including dead animal carcasses from the surrounding pork industry businesses.³¹¹ Chemicals in the form of creosote, dredging waste, asbestos, ash, and sludge enter the landfill as well. The site accepts over 1.8 million tons of waste annually.³¹² Initially the Sampson County Landfill assured residents living around the site that they would receive a free water service line and decreased taxes, but these never materialized.³¹³ The landfill is continuously one of two top methane-producing landfills in the state, emitting over 32,000 metric tons a year, ten times the national average.³¹⁴ Since beginning operations, the landfill has been an issue of contention with surrounding residents who report severe odor, nuisance animals, groundwater contamination, hazardous air pollutants, methane emissions, and a lack of communication.³¹⁵

In Oak Ridge, Tennessee, a different type of waste is disposed of in landfills, radioactive material. Known as the Secret City, Oak Ridge was home to the Manhattan Project which developed the atomic bomb during World War II. As such, the town continues to produce significant radiological and hazardous waste, especially as Y-12 National Security Complex and National Lab structures are torn down.³¹⁶ These are either shipped to disposal facilities in other states or disposed of onsite at the Environmental

³¹⁰ Vaverkova, "Landfill Impacts," 431.

³¹¹ "Sampson County Landfill Brochure," accessed July 3, 2025, <https://ejohp.com/wp-content/uploads/2024/01/Sampson-County-Landfill-Brochure-FINAL-2.pdf>.

³¹² Kathleen Sullivan, "Regional Landfill's Pollution Endangers Community in Sampson County, NC and Surrounding Environment," *Southern Environmental Law Center*, February 13, 2024, <https://www.selc.org/press-release/regional-landfills-pollution-endangers-community-in-sampson-county-and-surrounding-environment/>.

³¹³ "Sampson County Landfill Brochure."

³¹⁴ Tom Pelton, "Methane from Landfills is a Major Source of Climate Pollution that EPA is Failing to Adequately Control," *Environmental INtegrity Project*, May 18, 2023, <https://environmentalintegrity.org/news/methane-from-landfills-is-a-major-source-of-climate-pollution-that-epa-is-failing-to-adequately-control>.

³¹⁵ Cameron Oglesby, "A Decades-Long Battle Against North Carolina's Largest Landfill is Ramping Up," *Grist Magazine*, January 19, 2024, <https://grist.org/accountability/a-decades-long-battle-against-north-carolinas-largest-landfill-is-ramping-up/>.

³¹⁶ Anita Wadhwani, "Environmental Protection Agency Sued Over Oak Ridge Landfill for Radioactive Waste," *Tennessee Lookout*, October 27, 2023, <https://tennesseelookout.com/2023/10/27/environmental-protection-agency-sued-over-oak-ridge-landfill-for-radioactive-waste/#:~:text=Environmental%20Protection%20Agency%20sued,not%20create%20more%20of%20them>.

Management Waste Management Facility (EMWMF), an area with a capacity of 2.2 million cubic yards.³¹⁷ As the facility is near capacity, this radioactive landfill will soon be joined by another that was surreptitiously approved by the Environmental Protection Agency despite objections by senior government officials and in violation of the Clean Water Act. The new facility, the Environmental Management Disposal Facility, is located on a Superfund site, however little else is known about the project as the EPA is illegally withholding public records that would shed light on the facility or its continued construction. These instances illustrate how landfills commodify the very Earth itself, allowing human refuse to take up space and live beneath its surface, leach into its groundwater, and leak foul odors into its air.

Forestry

Like land used for landfills, trees and their associated timber are yet another more-than-human body that experience significant commodification at the hands of humans. Human reliance on trees often goes unnoticed, but is strikingly prevalent when one considers the many uses of trees and wood products. These include easily identifiable objects such as lumber and paper, but also span broad and unappreciated categories of commodified products. For example, cellulose from trees is used to make rayon, a popular textile, as well as cellophane. Resin from coniferous trees is used as an additive for soft drinks, rosin for bows of stringed instruments, soap, and turpentine.³¹⁸ The resin of certain species can be used to make chewing gum and rubber is a product of the rubber tree (*Hevea brasiliensis*). Charcoal, cork, mulch, pencils, plywood, and countless other products owe their production to trees and wood. Each of these products is engaged heavily in capitalistic modes of production. Due to the multiplicity of uses, tree flexing has become an increasingly common undertaking in forestry-related industries. Producers who are able to stay flexible and use their tree products for a range of goods, from lumber and pulp to lignin and chemicals, in markets that differentially experience increases and decreases in demand, are most

³¹⁷ "Waste Disposal," U.S. Department of Energy, accessed August 1, 2025, [https://www.energy.gov/oreo/waste-disposal#:~:text=The%20cost%20burden%20of%20offsite,\)%20near%20Carlsbad%2C%20New%20Mexico](https://www.energy.gov/oreo/waste-disposal#:~:text=The%20cost%20burden%20of%20offsite,)%20near%20Carlsbad%2C%20New%20Mexico).

³¹⁸ Scott Leavengood, "What's a Tree Done for You Lately?" *Oregon State University Wood Innovation Center*, March 2006, https://www.plt.org/wp-content/uploads/2017/03/products_from_trees.pdf.

successful financially; tree flexing is thus a deeply capitalistic process, argues professor of global development studies in Helsinki, Markus Kröger.³¹⁹ What is essentially being commodified in regard to tree flexing is biomass in all of its forms, leading investors and large corporations toward new capital accumulation strategies in the form of trees. The goal in tree flexing is always to increase the number of interchangeabilities associated with each tree species. Large forestry multinationals, Kröger explains, increasingly purchase large stands, their commodity capital, with the hope of also increasing their monetary capital. Historically, these capitalist entities reside in the Global North but have sought to impose this model on the Global South where resources are significantly cheaper.

However, these activities are also becoming increasingly prevalent in developed countries including areas in the northwestern United States. In the Pacific northwest, clearcutting and overharvesting of old-growth timber resources in the first half of the 1900s led to attempts to breed into new trees “more commercially attractive characteristics” on an industrial scale.³²⁰ The very reproductive biology of tree species, such as the Douglas fir (*Pseudotsuga menziesii*) was targeted to make this species more flexible and, thus, more profitable. Professor and author Scott Prudham details how trees were “targeted, appropriated, and subsumed as a source of industrial productivity.”³²¹ Technology in the form of genetic engineering led to patents and other opportunities for establishing exclusive property rights over these living organisms. Like crop plants, trees began to undergo selection and breeding to make them more profitable. Today, because humans have exploited and used up once bountiful and preexisting natural capital, private industries, public agencies, and university laboratories have produced genetically ‘improved’ seeds and seedlings on behalf of major forest-products firms, to generate sufficient stock to meet the needs of industrial Douglas fir production, Prudham explains. This shift from focusing solely on extraction to planning for exploitation in the future leads to more disturbing and profound entanglements among biophysical nature, capital, and science.

³¹⁹ Markus Kröger, “The Political Economy of ‘Flex Trees’: A Preliminary Analysis,” *The Journal of Peasant Studies* 43, no. 4 (2016): 886-909.

³²⁰ Scott Prudham, “Taming Trees: Capital, Science, and Nature in Pacific Slope Tree Improvement,” *Annals of the Association of American Geographers* 93, no. 3 (2003): 636.

³²¹ Prudham, “Taming Trees,” 636.

Another of these entanglements arises in the paper industry. Paper is typically manufactured from cellulose derived from trees and other plants such as cotton and rice. Production of paper requires tree pulp which can be produced from wood chips using either chemical or mechanical pulping.³²² Softwoods such as pine are preferred for paper making due to their strong elastic fibers. While the process may not initially seem exploitative, the rate at which paper is produced and the modern technology which allows for this speed and efficiency make it so. The invention of the paper machine in 1799 at the turn of the century in France ensured paper production's capitalist futures. Today, what is known as the Fourdrinier paper machine can quickly produce all varieties of papers through mechanized conversion of wood chips into pulp, washing and bleaching, refining, beating, sizing, and coloring. Very literally, the fiber of trees, more-than-human organisms, becomes fodder for the capitalist paper machine.

Outlining these forms of commodification is vital in order to make salient the observation that commodification via sex trafficking and anthropogenic environmental exploitation are clonal, mirror images originating from a single common ancestor: man. While the type of body differs in each scenario, the exploitation is similar. These bodies, my own, the Earth's, and more-than-human species and entities are kennings, indirect and metaphorical indices of commodification. Their importance in relation to one another cannot be overstated and one may imagine my recognition of these kin species as a mirror stage. The Lacanian mirror stage proposes that an infant passes through a phase in which they view their own external body as an image, reflected back at them, and identify with this gestalt, a form whose meaning is greater than the sum of its parts.³²³ The infant finds in the mirror what they will become and the mirror stage establishes subject as dependent on external others for formation. Lacan writes that the function of the mirror stage is "to establish a relationship between an organism and its reality...between the *innwelt* and *Umwelt*."³²⁴ Thus, in my own mirror stage, I, the *Innenwelt* (internal, subjective world) recognize the *Umwelt* (the surrounding environment) as which I will have always already become. I see commodified

³²² Salim Hiziroglu, "Basics of Paper Manufacturing," *Oklahoma State University Robert M. Kerr Food and Agricultural Products Center*, 169-1.

³²³ Jacques Lacan, "The Mirror Stage as Formative of the I Function" in *Écrits*, trans. Bruce Fink (W. W. Norton and Company, 2006 (1949)), 75-81.

³²⁴ Lacan, "The Mirror Stage", 78.

more-than-humans reflect back to me and in them see myself. Together, as in the case of *Vaccinium oxycoccos*, we are gestalt, a conglomerate greater than the sum of our components (Fig. 6). While it is disheartening to learn of other commodified entities, it is joyous to find others like you. This is why the bodies represented in my work, both human and more-than-human, must not be separated.



Fig. 6. Katie Simmons, *Vaccinium oxycoccos*, 2023, Ballpoint pen and homemade natural dye made from wild cranberries (*Vaccinium oxycoccos*) on cotton with hand-quilted layers of rayon, cut-outs, and embroidery, 55 x 30".

II. BIRDS OF A FEATHER

Birds of a feather flock together. *Idiom.* Individuals with shared traits and backgrounds naturally gravitate towards one another. Derived from observation of birds grouping together for safety or companionship.

Visual Materiality

Complementary to this subject matter is the material with which I engage. Within my work, the use of textiles, dyes, ecoprinting, and the incorporation of both natural and synthetic materials are iterative processes of making kin, building ecosystems, and drawing connections among similarly commodified forms. By observing how these materials behave in my work and in the world, I enhance my understanding of the effects of commodification, in both humans like myself and more-than-humans. As foundational substrates, I'm drawn to natural materials including cotton, linen, silk, and wool. For example, *Oligocottus maculosus* composed of muslin, bleach-dyed cotton twill, and cotton embroidery thread (Fig. 7).



Fig. 7. Katie Simmons, *Oligocottus maculosus*, 2024, Ballpoint pen on cotton with quilted layers of bleach-dyed cotton and embroidery thread, 50 x 50".

These cellulose and protein-based fibers are durable, flexible, naturally-occurring, and represent a diverse array of thicknesses, textures, and abilities to hold color and marks. For example, in *Lupinus littoralis*, I incorporate a wide range of these natural fibers including silk crepe de Chine, wool yarn woven on a floor loom, thick cotton canvas, and cotton embroidery thread (Fig. 8). While I once worked primarily on cellulose-based paper fibers, I've come to find companionship in the numerous other natural fibers available to me. By combining multitudes of varying natural fibers, I achieve a materiality that references ecosystems and bodies of living organisms. In the piece *Scavengers III*, I lean deeply into this diversity of forms and materials, using scraps from numerous prior projects (Fig. 9). Within this work grows cotton cheesecloth, silk and muslin remnants, cotton embroidery thread, and old and worn cotton burlap sacks. Similarly, in *Scavengers II*, I use thick, burgundy-colored found curtains as the background and

incorporate through quilting embroidered pieces and silk and cotton scraps from previous projects (Fig. 10). On this surface, I once again create imagined ecosystems with ballpoint pen.



Fig. 8. Katie Simmons, *Lupinus littoralis*, 2024, Ballpoint pen and homemade natural dye made from seashore lupine (*Lupinus littoralis*) on cotton and silk with quilted layers of floor loom weavings, cut-outs, smocking, and embroidery, 42 x 74".



Fig. 9. Katie Simmons, *Scavengers III*, 2025, Ballpoint pen on scraps of naturally dyed cotton, silk, and linen with quilted layers of embroidery, burlap, cheesecloth, bleach-dyed cotton and cut-outs, 68 x 78".

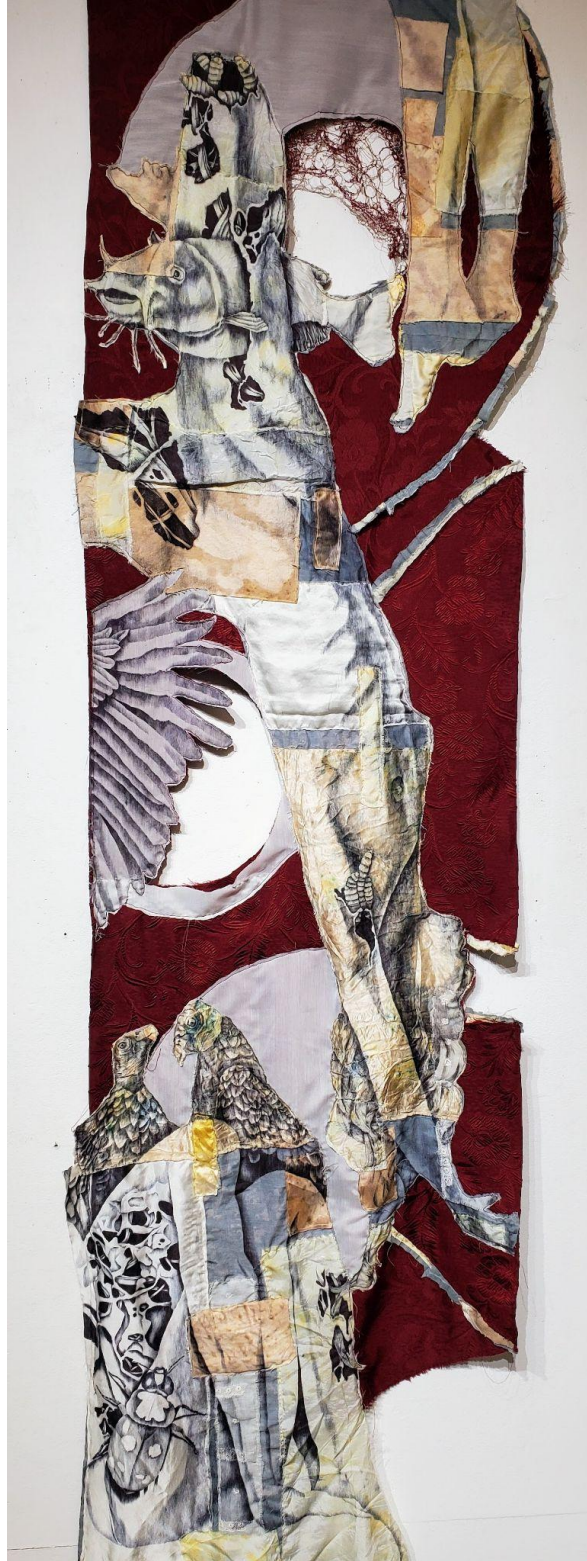


Fig. 10. Katie Simmons, *Scavengers I*, 2025, Ballpoint pen on naturally dyed scraps of linen, silk, and cotton with quilted layers of found curtains, cut-outs, embroidery, and rayon, 90 x 32".

The intention behind using these natural materials in conjunction with my subject matter is to, once again, draw parallel forms among commodified entities. I view warm sheep and goat's wool, cotton grown under blazing suns, and silk spun from delicate worms half a world away as portions of these organisms' bodies, something that remains even once they are gone. By combining these materials, themselves commodified products, with figurative representations of other species, I provide each of these commodified entities with both care and kin through acts of sympoiesis, what Donna Haraway describes as "making-with."³²⁵ Like Haraway I do not believe that we can ever go back to before, restoring everything to a previous state, but I do find that by making kin with others who have also endured "trouble," we can attempt to recuperate care and symbiotic relationships, and take back control over what was supposed to be our undoing, the end of our histories. However, unlike Haraway, I find myself dissatisfied with her language, especially that which at times becomes inaccessible jargon. It is helpful, then, combine notions of kin and sympoiesis with concepts of the holobiont, what Anna Tsing describes as assemblages of beings that evolve and adapt together. The holobiont is both a logical, demonstrable scientific concept and an apt metaphor for my purposes of identifying the collective commodification of humans and more-than-humans wrapped up together.³²⁶ In choosing to pair natural materials with my subject matter, I identify commodified kin. By actually executing this coalescence, I create holobionts.

Mirroring my substrates are the materials with which I make marks upon these surfaces. Drawing on ethnobotanical traditional knowledge and my background in biology, I work with algae, plants, lichen, and fungi, all more-than-human bodies, to create natural dyes, inks, and ecoprints. These are gathered from the environments in which I find myself, marking both chronology and place. For example, while living in Colorado, I gathered two non-native invasive species, Oregon grape (*Mahonia aquifolium*) and wineberry (*Rubus phoenicolasius*) to create *Invasive Species I-III* (Fig. 11a-d). The neon yellow heartwood and roots of the Oregon grape create an astringent, intense dye of the same color when boiled

³²⁵ Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Duke University Press, 2016), 3.

³²⁶ Tsing, et al. *Field Guide*, 2024.

while the fruit of the wineberry boils down to a raspberry magenta hue. After mordanting cellulose-based cardboard and matboard, I dripped, spread, and poured these dyes onto their substrates.



Fig. 11.1. Katie Simmons, *Invasive Species I (Mahonia aquifolium)*, 2025, Ballpoint pen and homemade natural dye made from Oregon grape (*Mahonia aquifolium*) on cardboard, 49 x 38”.



Fig. 11.2. Katie Simmons, Invasive Species II (*Rubus phoenicolasius*) 2025, Ballpoint pen and homemade natural dye made from wineberry (*Rubus phoenicolasius*) on card stock, 48 x 42”.



Fig. 11.3. Katie Simmons, *Invasive Species III (Mahonia aquifolium)*, 2025, Ballpoint pen and homemade natural dye made from Oregon grape (*Mahonia aquifolium*) on cardboard, 38 x 56".



Fig. 11.4. Katie Simmons, *Invasive Species I-III (Mahonia aquifolium x Rubus phoenicolasius)* 2025, Ballpoint pen and homemade natural dyes made from wineberry (*Rubus phoenicolasius*) and Oregon grape (*Mahonia aquifolium*) on cardboard and cardstock, variable sizes.

Similarly, I created *Egregia menziesii* while at an artist residency on the Oregon coast (Fig. 12).

Therefore, the dye in this piece is made from a seaweed species gathered from the beach, feather boa kelp. After mordanting cotton fabric and boiling the seaweed to create dye, I soaked the body of fresh seaweed in the dye and laid it directly across the fabric to create a trace of this form. At the same residency, I made the dye for *Corallina vancouveriensis* from graceful coral seaweed, a dusty pink tidepool species, which created a brilliant green hue (Fig. 13).



Fig. 12. Katie Simmons, *Egregia menziesii*, 2024, Ballpoint pen and homemade natural dye made from feather boa seaweed (*Egregia menziesii*) on cotton, 20 x 70".



Fig. 13. Katie Simmons, *Corallina vancouveriensis*, 2024, Ballpoint pen and homemade natural dye made from graceful coral seaweed (*Corallina vancouveriensis*) on watercolor paper, 22 x 30".

Similar pieces are the result of creating alcohol-based inks which have different chemical characteristics than water-based dyes. For example, while in east Tennessee where I was born and raised, I worked with the bark of a black walnut (*Juglans nigra*) tree growing in the backyard of my childhood home. Using the resulting ink on three panels of mordanted cardboard, I was able to create the beautiful forms of *Juglans nigra* (Fig. 14).



Fig. 14. Katie Simmons, *Juglans nigra*, 2024, Ballpoint pen and homemade natural ink made from black walnut (*Juglans nigra*) bark on three panels of cardboard, 36 x 55”.

A third technique I use when working with natural bodies is ecoprinting, a process that involves collecting leaves, flowers, fruit, lichen, moss, and other naturally occurring materials, laying them flat on a mordanted fiber, and wrapping this around a dowel, creating a “bundle” that is then wrapped tightly with twine. Wrapping with twine increases pressure which is a key element in ecoprinting. Next, the bundle is steamed; heat is the second vital component in this process. The resulting prints are highly variable, unexpected and experimental. For example, while working at an artist residency in Virginia, I created with maidenhair fern (*Adiantum pedatum*) and ecoprinted the plant on silk (Fig. 15a-b). Similarly, while working on the Oregon coast, I gathered the non-native common foxglove (*Digitalis purpurea*) flowers which line the roads with bright pinks and purple blooms. The resulting print is the basis for *Digitalis purpurea*, unexpectedly turning green and yellow (Fig. 16).



Fig. 15.1. Katie Simmons, *Adiantum pedatum*, 2025, Ballpoint pen and ecoprinted maidenhair fern (*Adiantum pedatum*) on silk with quilted layers of found curtains and cut-outs, 65 x 80".



Fig. 15.2. Katie Simmons, Close-up view of *Adiantum pedatum*, 2025.



Fig. 16. Katie Simmons, *Digitalis purpurea*, 2025, Ballpoint pen and ecoprinted common foxglove (*Digitalis purpurea*) on silk, 70 x 48".

Ecoprinting can also be manually manipulated by the addition of certain chemicals. For example, to sadden, or darken, a print, leaves can be dipped into a solution of water and ferrous sulfate before printing as is the case in *Athyrium filix-femina* (Fig. 17)



Fig. 17. Katie Simmons, *Athyrium filix-femina*, 2024, Ballpoint pen and ecoprinted lady fern (*Athyrium filix-femina*) on cotton and linen with quilted layers of lace, cotton, and cut-outs, 48 x 33".

Perhaps most interestingly is when natural dye and inks come together with ecoprinting to create layered os a variety of substrates. For example, in *Symplocarpus foetidus*, cotton, silk, and cardboard are ecoprinted and dyed with golden beets, skunk cabbage, and pignut hickory bark (Fig. 18). Likewise, in *Arctostaphylos uva-ursi*, bearberry leaves gathered in the Rocky Mountains of Colorado while I was ultra trail running, were boiled to create a golden yellow dye. After ecoprinting silk with the bright red bearberry fruit, the same fabric was then dyed with this golden hue (Fig. 19). Similarly, layers of dye and ecoprints from persimmon fruit, sassafras leaves, poke berry fruit, and tulip poplar leaves created the silken background of *Liriodendron tulipifera* (Fig. 20).



Fig. 18. Katie Simmons, *Symplocarpus foetidus*, Ballpoint pen and homemade natural dyes and ecoprints made from golden beets, pignut hickory bark, and skunk cabbage (*Symplocarpus foetidus*) on cotton, silk and cardboard, 78 x 60".



Fig. 19. Katie Simmons, *Arctostaphylos uva-ursi*, 2024, Ballpoint pen and homemade natural dye made from bearberry (*Arctostaphylos uva-ursi*) leaves and ecoprinted bearberry fruit on silk with smocking and quilted layers of cut-outs with rayon, 32 x 56".



Fig. 20. Katie Simmons, *Liriodendron tulipifera*, Ballpoint pen and homemade natural dye and ecoprints made from persimmons, poke berries, and tulip poplar (*Liriodendron tulipifera*) leaves on silk, 28 x 33".

Once more, by working with more-than-human species to create natural dyes, inks and ecoprints, I use living bodies as collaborators in my work. I persuade them to share with me their pigments, textures, inks and dyes. Their living, fleshy bodies parallel the bodies depicted in the subject matter of my work. This materiality is a reiteration of making kin with more-than-human companions. Furthermore, the way in which their dyes, inks, and prints spill, seep, and permeate through fibers mirrors the corporeality of every body and the processes it undergoes from birth to living to death. Like bodily fluids that seem to flow so readily from humans and more-than-humans during sadness, injury, sickness, reproduction, birth, and death, these liquids are kennings for commodified forms.

Further complicating these forms is the inclusion of non-natural materials, such as plastic, in my work. In my drawings, this is accomplished by the utilization of ballpoint pen, a pedestrian, accessible,

lovely tool. It is “artificial” in the sense that it is made by humans, and this juxtaposition against the natural dyes, inks, and prints is intentional. Through the incorporation of both natural and unnatural, I mirror the reality of our contemporary landscapes, environments filled with human refuse and debris. Evidence of the human is inescapable in both nature and my artwork. In order to push this concept further, I have also begun to more forcefully combine the natural and synthetic in other ways as well. For example, in *Pinecone Quilt I*, the artificial and natural come together as tens of thousands of sewn triangles of plastic are quilted onto cotton to form a dimensional pinecone quilt (Fig. 21.1, 21.2, 21.3). Similarly, *Scavengers II* presents plastic and natural objects delivered to the shore by the Pacific Ocean, all gathered over a period of 3 weeks at an artist residency in Oregon (Fig. 22). In this work, rope, plastic bottles, foam, crab shells, driftwood, oyster shells, plastic lighters, shoes, rocks, bird skulls, a whale bone, buoys, socks, sand dollars, jackets, netting, sand toys, dried seaweed, and other artifacts find themselves together. Perhaps more realistic in some ways than many of my other pieces, these quilts make visible through intrusion of plastic the commodification of humans. Their refuse, what they throw out and leave behind is turned into yet another material through which care can be translated. Although such plastic waste is omnipresent and deleterious, it has become part of our rivers, oceans, and bloodstreams. To exclude the artificial entirely would be to deny the very commodification about which I write and make. Therefore, these conglomerations of the natural and artificial, such as *Pinecone Quilt II*, speak to a provocative new direction for one line of my practice (Fig. 23).



Fig. 21.1. Katie Simmons, *Pinecone Quilt I Side A*, 2025, Plastic refuse, embroidery thread, found curtains, 85 x 85".



Fig 21.2. Katie Simmons, Close-up of *Pinecone Quilt I Side A*.



Fig. 21.3. Katie Simmons, *Pinecone Quilt I Side B*, Ballpoint pen on found bed sheets with quilted plastic waste and embroidery, 85 x 85".



Fig. 23. Katie Simmons, *Pinecone Quilt II*, 2025, Plastic waste, found curtains, embroidery thread, 40 x 276".

Symptomatology of Commodification Via Sex Trafficking

As I interact with this subject matter and materiality on a daily basis, there is no escaping the fact that commodification haunts our earthly bodies. As I draw parallels between myriad commodified entities, human and more-than-human, I observe that these bodies cannot escape the harmful effects of exploitation. Our behavior and health are also mirror images. Although effects are variable, commodification undeniably alters behavior and health. In order to demonstrate that both forms of commodification result in deleterious effects, it is necessary to explore what happens after these entities are turned into products to be bought, traded and sold. First, the psychological and physical symptomatology observed in sex trafficking survivors are investigated. Effects on human survivors can be split into two categories, psychological and physical. Psychological effects can further be categorized as cognitive, emotional, and social.³²⁷

Physical Effects

Survivors of sex trafficking report frequent neurological problems including memory loss, headaches, impaired concentration, confusion, disorientation, and dizziness.³²⁸ Skin problems including rash, itching, boils, burns, and lice are also common.³²⁹ Malnutrition, weight loss, exhaustion, and exacerbated pre-existing conditions are similarly reported symptoms.³³⁰ Sexually transmitted diseases and infections, fertility concerns, and forced abortions represent an additional primary category of physical effects.³³¹ Furthermore, gastrointestinal symptoms, cardiovascular symptoms, dental and skeletal problems, and increased occurrence of colds, flu and sinus infections are frequently reported by

³²⁷ David A. Alexander and Susan Klein, "Kidnapping and Hostage-Taking: A Review of Effects, Coping and Resilience," *J R Soc Med* 102, no. 1 (January 2009): 16-29.

³²⁸ Cathy Zimmerman et al., *Stolen Smiles: A Summary Report on the Physical and Psychological Health Consequences of Women and Adolescents Trafficked in Europe* (The London School of Hygiene and Tropical Medicine, 2006), 12; Okech et al., "Social Support," 214.

³²⁹ L. Ottisova, et al., "Prevalence and Risk of Violence and the Mental, Physical, and Sexual Health Problems Associated with Human Trafficking," *Epidemiology and Psychiatric Sciences* 25 (2016): 317; Zimmerman et al., "Stolen Smiles," 14.

³³⁰ Alexis A. Aronowitz and Anneke Konning, "Understanding Human Trafficking as a Market System: Addressing the Demand Side of Trafficking for Sexual Exploitation," *Revue Internationale de Droit Penal* 3, no. 85 (2014): 678; Okech et al., "Social Support," 214; Zimmerman et al., "Stolen Smiles," 12.

³³¹ Jennifer McQuaid, "Understanding the Psychological Effects of Sex Trafficking to Inform Service Delivery," *Forced Migration Review* 64 (June 2020): 42; Mumey et al., "Mental Health Needs," 186; Zimmerman et al., "Stolen Smiles," 15.

survivors.³³² Survivors have also detailed more life-threatening physical harm during trafficking including rape, stabbing, strangulation, and blunt force trauma.³³³

Psychological Effects

Of equal importance as the physical effects of sex trafficking are the psychological effects. These include emotional symptoms: depression, feeling hopeless or worthless, suicidal thoughts, suicide attempts, loneliness, anger, dissociation, guilt, anhedonia, numbness, fear, anxiety, panic, nervousness, frozen fright and shock.³³⁴ Similarly, cognitive psychological symptoms include flashbacks, intrusive thoughts, hypervigilance, hyperarousal, psychological infantilism, learned helplessness, and denial.³³⁵ Lastly, psychological social effects of sex trafficking encompass withdrawal, avoidance, irritability, and detachment.³³⁶ When presented together, these symptoms can lead to a diagnosis of post traumatic stress disorder, PTSD, or complex post traumatic stress disorder, CPTSD.³³⁷ PTSD is typically diagnosed using interviews and questionnaires such as the DSM-5 and the Harvard Trauma Questionnaire.³³⁸ Symptoms include recurrent thoughts, recurrent nightmares, emotional or physical reaction to memories of trauma, hypervigilance, trouble sleeping, avoidance, and numbing.³³⁹ Research has demonstrated common comorbidity between PTSD, depression, and anxiety among female survivors of sex trafficking. Additionally, while symptoms of depression and anxiety tend to decrease as time since trafficking increases, symptoms of PTSD do not.³⁴⁰ For this reason, many researchers and practitioners have developed the diagnosis of CPTSD which is the result of complex trauma that is prolonged, may escalate over time, and from which escape is not usually possible.³⁴¹ Like PTSD, CPTSD is assessed using

³³² Zimmerman et al., "Stolen Smiles," 13-14.

³³³ Mumey et al., "Mental Health Needs," 187; Zimmerman et al., "Stolen Smiles," 10.

³³⁴ McQuaid, "Understanding the Psychological Effects," 42; Mumey et al. "Mental Health Needs," 188; Okech et al., "Social Support," 211.

³³⁵ McQuaid, "Understanding the Psychological Effects," 43; Mumey et al. "Mental Health Needs," 189.

³³⁶ McQuaid, "Understanding the Psychological Effects," 43; Zimmerman et al., "Stolen Smiles," 16-22.

³³⁷ Christine A. Courtois, "Complex Trauma, Complex Reactions: Assessment and Treatment," *Psychotherapy: Theory, Research, Practice, Training*, 41, no. 4 (2004): 412-41; E. K. Hopper and L. D. Gonzalez, "A Comparison of Psychological Symptoms in Survivors of Sex and Labor Trafficking," *Behavioral Medicine* 44, no. 3 (2018): 178-179; Mazeda Hossain et al., "The Relationship of Trauma to Mental Disorders Among Trafficked and Sexually Exploited Girls and Women," *American Journal of Public Health* 100, no. 12 (2010): 2442.

³³⁸ U.S. Department of Health and Human Services, *A Treatment Improvement Protocol: Trauma Informed Care in Behavioral Health Services* (Rockville: U.S. Department of Health and Human Services, 2014), 57; Zimmerman et al. "Stolen Smiles," 19-22.

³³⁹ Zimmerman et al., "Stolen Smiles," 19-22.

³⁴⁰ Hossain et al., "The Relationship of Trauma," 2442.

³⁴¹ McQuaid, "Understanding the Psychological Effects," 43.

interviews. In addition to symptoms of PTSD, CPTSD presents with alterations in modulating affective impulses, changes in attention and consciousness, changes in self perception, alterations in perceptions of perpetrators, alterations in relationships with others, somatization, and changes in systems of meaning.³⁴² PTSD and CPTSD diagnoses increase among sex trafficking survivors with certain reported conditions during trauma: being physically restrained or unable to leave holding areas, sleep deprivation, sexual violence, physical violence, lack of clothing and hygiene, overexposure to environmental elements, inadequate food and water, and overcrowding.³⁴³

These effects of sex trafficking alter every aspect of life for survivors. They are troubling to say the least. Furthermore, their injurious nature is compounded by the fact that these symptoms are poorly documented and understood by medical practitioners, service providers, researchers, and survivors themselves. While much work has been done to understand other forms of trauma such as domestic violence, the experiences and effects of sex trafficking on survivors is poorly understood and quantified.³⁴⁴ Despite the fact that sex trafficking is widely recognized as a “global public health and social justice concern,” numerous investigations note this lack of data and analysis.³⁴⁵ These gaps in understanding can be filled by applying a transdisciplinary commodity framework to instances of sex trafficking.

Symptomatology of Commodification via Environmental Exploitation

Similarly to humans, the Earth and its more-than-human inhabitants exhibit symptomatology resulting from commodification. These can be divided into six broad categories: biodiversity loss, pollution, global climate change, ocean acidification, habitat destruction and loss, and invasive species.

³⁴² Courtois, “Complex Trauma,” 414.

³⁴³ Okech et al., “Social Support” 210.

³⁴⁴ Elyssa Schroeder et al., “Do Social Service Interventions for Human Trafficking Survivors Work? A Systematic Review and Meta-Analysis,” *Trauma Violence and Abuse* 25, no. 3 (2024): 3, 10-11; David Okech et al., “Seventeen Years of Human Trafficking Research in Social Work: A Review of the Literature,” *Journal of Evidence-Informed Social Work* 15, no. 2 (2018): 103, 112.

³⁴⁵ Bettio et al., “Sex Work,” 3; Elyssa Schroeder et al., “A Review of Prevalence Estimation Methods for Human Trafficking Populations,” *Public Health Reports* (2022): 46S; Okech et al., “Social Support,” 209; Schroeder et al., “Social Services Interventions,” 10-11.

Biodiversity Loss

Loss of biodiversity refers to a decrease in the number of species in a specific ecosystem. All forms of commodification previously examined result in biodiversity loss. For example, oil extraction has been shown to “put biodiversity conservation at risk,” in a multitude of ways.³⁴⁶ In Uganda’s Murchison National Park, drilling in the park as well as infrastructure related to drilling represents a risk to biodiversity. Biological and ethnographic studies such as those by the Africa Institute for Energy Governance have documented the negative impact the Tilenga oil project has had on wildlife biodiversity in the region, including animals such as elephants, leopards, lions, shoebill storks, and hippopotami.³⁴⁷ Elephants, feeling the vibrations from drilling rigs, moved from the park into surrounding communities where they lack the resources for survival. Similarly, nocturnal and light-sensitive species, including leopards and lions, have been impacted by light pollution. Furthermore, wellpads have taken over habitat important for the conservation of aquatic species like the shoebill and hippopotami. Even simple roads providing access to infrastructure exposed these and other species to higher levels of poaching, resulting in biodiversity loss. Likewise, in the Dakotas, fracking poses serious risks to biodiversity.³⁴⁸ Here, oil and gas development has been shown to negatively impact the already declining populations of ecologically sensitive grassland bird species such as the sage grouse (*Centrocercus urophasianus*).³⁴⁹ Furthermore, when fracking operations occur near prairie pothole habitats, animal mortality in these vital and sensitive aquatic habitats has increased significantly as a result of dust, traffic, pollution, and noise.

Comparably, mining can also result in a loss of biodiversity. In the case of mining in the Atacama Desert, large-scale demand of yareta (*Azorella compacta*) led to commodification and decimation of the plant in pursuit of the region’s copper. Its formal subsumption led to both its distribution and abundance significantly declining.³⁵⁰ Likewise, mining can impact vertebrate biodiversity due to displacement, disruption of movement, and loss of migration corridors due to habitat destruction, pollution, reduced

³⁴⁶ MacKenzie et al., “Drilling through Conservation,” 322.

³⁴⁷ Africa Institute for Energy Governance, “Murchison Falls National Park is Dying,” iv.

³⁴⁸ Aczel and Makuch, “Shale Resources,” 1.

³⁴⁹ Howden et al., “Impact of the Bakken,” 526.

³⁵⁰ Calderón-Seguel and Prieto, “Political Economy of Yareta,” 192.

reproductive success, increased poaching, and other factors.³⁵¹ For example, mining in the Chilean Altiplano increased vicuña (*Vicugna vicugna*) mortality due to accidental vehicle collisions, water pollution and extraction, and habitat destruction and disturbance.³⁵² The vicuña is the smallest South American camelid with a restricted range above 3200 m in elevation in the highland plateaus. In another mining project in Peru, bat biodiversity was impacted as a result of the release of mercury from small-scale gold mines. Hundreds of bat fur samples from control and post mining sites in the region showed mercury, a toxic element, to be present in insectivorous and piscivorous species in the post-mining sites, confirming the exposure of toxic mercury at multiple trophic levels.³⁵³

In cases of the commodification of trees, biodiversity can also be negatively impacted, especially that of aquatic species living downstream from paper mills. For example, in the section of the Pigeon River downstream from east Tennessee's Canton paper mill, biodiversity plummeted and remained dismally low after the mill opened its doors in 1908.³⁵⁴ The mill released dyes and other toxic chemicals into the Pigeon River, resulting in an intensely dark color, a foul odor, warmer temperatures, and high turbidity. Higher temperatures can be devastating to fish biodiversity, especially those species evolved to live in cool mountain streams. Even more temperature-tolerant species such as the river chub (*Nocomis micropogon*) were completely absent. Similarly, the Appalachian elktoe (*Alasmidonta raveneliana*) and wavyrayed lampmussel (*Lampsilis fasciola*), two freshwater mussel species, are found above, but not below the mill. Riverweed (*Podostemum ceratophyllum*), an important food source for some species is absent below the mill, as is the Eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) a species of giant salamander with whom I grew up swimming in the cool mountain streams of the foothills.

³⁵¹ Hall Sawyer et al., "A Framework for Understanding Semi-Permeable Barrier Effects on Migratory Ungulates," *Journal of Applied Ecology* 50, no. 1 (2013): 68-78; Mata et al., "Three-Step Approach," 13627.

³⁵² Mata et al., "Three-Step Approach," 13627.

³⁵³ Alejandro Portillo et al., "Mercury Bioaccumulation in Bats in Madre de Dios Peru: Implications for Hg Bioindicators for Bioindicators for Tropical Ecosystems Impacted by Artisanal and Small-Scale Gold Mining," *Ecotoxicology* 33, no. 4-5 (2024): 457-469.

³⁵⁴ Holly Kays, "River in Rebound: After Mill Closes, a Healthier Pigeon Could Help Canton Recover," *Smoky Mountain News*, March 15, 2023, <https://smokymountainnews.com/archives/item/35297-river-in-rebound-after-mill-closes-a-healthier-pigeon-could-help-canton-recover>.

The pet and exotic species trade is an “increasingly growing threat to global biodiversity conservation.”³⁵⁵ More and more species are now at risk of overharvesting and are threatened with extinction due to both the legal and illegal side of this market. Some have already been pushed to extinction by this practice including the Javan rhinoceros (*Rhinoceros sondaicus*) in Vietnam.³⁵⁶ Other species are not yet extinct, but feel the pressure of this extractive commodification. For example, although it is illegal to possess otters in Thailand under the National Wildlife Protection Act, high volumes of newborn pups are intercepted in the illegal pet trade, indicating that the volume of trade is significant and problematic as the smooth-coated otter (*Lutrogale perspicillata*) and Asian small-clawed otter (*Aonyx cinereus*) are already recognized as vulnerable by the IUCN Red List.³⁵⁷ In captivity the average age at death of these otters has been found to be 1 year and 7 months as compared to their normal 10-15 year lifespan in the wild.³⁵⁸ An additional compounding effect on biodiversity is that many nations are insufficiently prepared to deal with confiscation and successful return of species to their natural habitats. For example, in the Chinese province of Yunnan, over 12,000 live reptiles were seized between 2010 and 2015, but fewer than 30% were returned to the wild.³⁵⁹ The rest went to sanctuaries or into the pet-food industry. Similarly, all live birds seized in this province were released back into the wild but in habitats and at sites unfamiliar to them without follow-up monitoring. These outcomes fail entirely to address the issues at hand.

Similarly, the commercial fishing industry is one major source of declines in marine and aquatic biodiversity. Overfishing is recognized as one of the greatest threats to marine biodiversity.³⁶⁰ For example, declines in paddlefish in the southeastern United States were caused by overharvest for the collection of roe. For every mature, egg-laden female harvested, about 12 other individuals, males and immature females, were captured as bycatch in hobbled gill nets, suffering especially high mortality at the

³⁵⁵ Siriwat and Nijman, “Illegal Pet Trade,” 469.

³⁵⁶ Fujihara, “Molecular Tracing,” e70010.

³⁵⁷ Lalita Gomez et al., “Illegal Otter Trade: An Analysis of Seizures in Selected Asian Countries (1980-2015),” *IUCN Otter Specialist Group Bulletin* 34, no. 2 (2017): 104-114.

³⁵⁸ Bonnie M. Perdue et al., “Cognitive Research in Asian Small-Clawed Otters,” *International Journal of Comparative Psychology* 26, no. 1 (2013): 105-113; Okamoto et al., “Pet Otters in Japan,” 72.

³⁵⁹ McDonald, “Trading Animal Lives,” 850.

³⁶⁰ Shiffman et al., “Trophy Fishing,” 318-322.

end of the fishing season when the water was at its warmest.³⁶¹ Similarly, an analysis by scholar Loren McClenachan of historical trophy fishing photographs from Key West, Florida helps document declines in biodiversity due to overfishing. In addition to demonstrating a drastic decline in length and weight of fish over time, between 1956 and 2007, this study suggests there have been substantial declines in large predatory fish numbers in these waters. This is likely due to the fact that larger bodied animals are “exploited preferentially and take longer to recover.”³⁶² Sharks including the great hammerhead (*Sphyrna mokarran*), scalloped hammerhead (*Sphyrna lewini*) and great white (*Carcharodon carcharias*), large groupers such as the goliath (*Epinephelus itajard*) and Nassau (*Epinephelus striatus*), and other predatory fish such as sawfish (*Pristis spp*) came to make up a smaller proportion of the species composition of catches, evidencing declines in their populations. An important factor that may be responsible for some of these decreases in species composition and size is the idea of trophy fishing itself. The International Game Fishing Association is an organization responsible for keeping world record fishing catches by categories. Although the non-profit does beneficial conservation work, it is also responsible for the removal of some of the largest members of many species, usually those that are most fecund, preventing them from reproducing and passing on their hardy DNA to the next generation. Because candidate fish must be transported to a land-based weigh station to be checked against current records, many large individuals die but never make it into the books. And while some populations and species can withstand this type of pressure, there are those who are more sensitive, especially those species who exhibit slow growth, low rates of biological productivity, and face other selective pressures. There are currently 85 species of fish listed as threatened by the IUCN Red List for which the IGFA still issues records.³⁶³ Despite calls for change, the IGFA refuses to change its ways.

Pollution

Polluted environments are another major side effect of environmental exploitation and commodification. Pollution can be conceptualized as human-made or human-produced substances or

³⁶¹ Bettoli, Scholten and Reeves, “Protecting Paddlefish,” 392.

³⁶² McClenachan, “Documenting Loss,” 637.

³⁶³ Shiffman et al., “Trophy Fishing,” 319.

energy released into the environment, reducing the health of ecosystems, including human and more-than-human species. All parts of the environment can be polluted, air, water, and land, and pollution includes substances such as litter, light, noise, chemicals, gases, fertilizers, pesticides, microplastics, and countless other materials. Heavily polluted spaces are symptoms of human commodification of nature. For example, in 2021, landfills in the United States emitted more than 3.7 million metric tons of methane with the climate-warming impact equivalent to driving 66 million gasoline-powered vehicles for a year.³⁶⁴ Much of this airborne pollution is due to methane produced from food waste and is a result of decomposition of organic matter. The volume of such waste has increased by 70% in the U.S. from 1990 to 2017.³⁶⁵ Leaks that allow this greenhouse gas to escape into the atmosphere go largely unreported by landfills as the EPA only requires these landfills to self-report estimated methane emissions. Furthermore, these landfills can also produce additional forms of pollution due to waste blown away by the wind, dust generated from landfill surfaces, and leachate seeped into the soil and groundwater.³⁶⁶ These leachates are of special concern. They form when precipitation percolates through deposited waste, binding to particulates composed primarily of nitrogen, volatile and toxic organic compounds, and heavy metals, all hazardous pollutants in groundwater tributaries and surface runoff, researcher Magdalena Vaverkova explains. These can bioaccumulate in species from the bottom to top of the food chain.

In a different form, pollution arises from aquaculture, such as in frog farming in Brazil. In these settings, organic and inorganic nutrients are the main contaminants and include those typically seen in fertilizers: nitrates, ammonia, phosphorus. When water is poured out or returned to the environment in any way after being used for these frog farms, it brings with it high concentrations of these nutrients in the form of excrement and uneaten feed residues, thereby degrading the surrounding ecosystems which may experience algal blooms and native species die-offs.³⁶⁷

³⁶⁴ Tom Pelton, "Methane from Landfills is a Major Source of Climate Pollution that EPA is Failing to Adquately Control," *Environmental Integrity*, May 18, 2023, <https://environmentalintegrity.org/news/methane-from-landfills-is-a-major-source-of-climate-pollution-that-epa-is-failing-to-ad-equately-control/>.

³⁶⁵ Pelton, "Methane from Landfills," 2023.

³⁶⁶ Vaverkova, "Landfill Impacts," 2.

³⁶⁷ Ribeiro and Toledo, "Brazilian Frog Farming," 2.

Pollution in the form of litter lingers after Yartsa Gunbu hunters vacate the Tibetan Himalayas, the ground strewn with beer bottles, plastic bags, and instant noodle containers.³⁶⁸ Ecotourism and recreational areas bring in people who cannot seem to use a garbage can to save their lives. Papermills cast out dye and toxic chemicals into water sources. Mining similarly leaches toxic chemicals into groundwater. The list is seemingly endless.

Global Climate Change

Across the globe, pollution in the form of greenhouse gases (GHG) is released at alarming rates at palm oil monoculture fields in Malaysia and Indonesia. This form of agriculture results in huge carbon emissions due to the clearcutting of land, which removes carbon sinks, the drainage of peatland, fires, and transportation of resources.³⁶⁹ In terms of carbon emissions due to forest cover loss, Malaysia and Indonesia are in the top three globally.³⁷⁰ Fires, used illegally for slash and burn clearing techniques, also indirectly contribute to these emissions as they accelerate peat decomposition. They also release volatile organic compounds (VOCs) and aerosol particles. These fires can also easily grow out of control due to the drainage of peatlands, which would previously have acted as natural fire barriers, and the burning of peat which is naturally combustible. In 2015, for example, wildfires caused by palm oil cultivation raged across Indonesia for three weeks, producing more carbon emissions in this time period than the country of Germany did in the entire year.³⁷¹ These emissions result in both immediate and more gradual climatic changes. Removal of tree cover and increases in fires serves to increase temperature in both the air and soil. Warming due to these land cover changes and reduced evaporative cooling expedites longer-term global warming effects which CO₂ emissions perpetuate. Despite the current messaging from our United States government, global warming has occurred, is getting worse, and has already passed all the inane tipping points that “scientists” somehow keep adjusting forward. CO₂ and other GHG released during processes related to palm oil monocultures enter the atmosphere where they act essentially as insulating

³⁶⁸ Winkler, “Yartsa Gunbu,” 298.

³⁶⁹ Claudia Dislich et al., “A Review of the Ecosystem Functions in Oil Palm Plantations, Using Forests as a Reference System,” *Biological Review* 92, no. 3 (2017): 1539-1569.

³⁷⁰ Murphy et al., “Oil Palm,” 8.

³⁷¹ Pye, “Commodifying Sustainability,” 219.

blankets, keeping in energy (heat) that the Earth would have otherwise radiated back into space. Unlike the other molecules in the atmosphere (Oxygen and Nitrogen), CO₂ interferes with infrared waves (emitted by the Earth by transforming sunlight) . This is because, based on geometry and composition, different molecules interact differently with energy wavelengths. CO₂ interacts and absorbs energy at wavelengths of 2,000 to 15,000 nm and infrared energy falls in this range. Therefore, CO₂ soaks up this energy and re-radiates it into space in all directions, 360 degrees. Therefore, some of the infrared energy the Earth emitted still goes into space; however, some of that energy stays in the Earth's atmosphere. This is global warming in a nutshell.

Ocean Acidification

The release of GHG from activities like palm oil cultivation also leads to the related symptom of ocean acidification. This is logical if one considers the vast amount of surface area water covers on the Earth. Oceans absorb some of the CO₂ released into the atmosphere, resulting in a series of chemical reactions. In simple terms, the number of hydrogen ions (H⁺) increases because of these reactions. These ions, not the CO₂ itself, are what result in a lowering of pH. Since the Industrial Revolution, the pH of shallow and surface waters has decreased (become more acidic) by 0.1 units. Because the pH scale is logarithmic with each whole number representing a tenfold change in hydrogen ions (H⁺), this 0.1 shift is much more significant than it may initially seem. It has led to approximately 40% of the global surface ocean and 60% of the subsurface ocean to be compromised by acidification, leading to habitat decline, mortality in species with shells or skeletons composed of calcium and carbonate, disruption of acoustic properties of the water and echolocation abilities of species, and countless other deleterious effects.³⁷²

Habitat Destruction and Loss

Further effects of environmental commodification present as habitat loss and degradation. Ironically, ecotourism can be a major source of this fragmentation and deterioration. For example, in Los Glaciares National Park in Argentinian Patagonia, the sheer number of visitors has negatively impacted

³⁷² "Study Finds Ocean Acidification is More Pervasive than Previously Thought," *NOAA Research*, June 11, 2025, <https://research.noaa.gov/study-finds-ocean-acidification-is-more-pervasive-than-previously-thought/>.

the Earth. Excessive visitors result from unauthorized tourism operators and cattle ranchers, causing erosion and pollution of land, air, and water.³⁷³ Additionally, in palm oil monocultures, clearcutting practices have destroyed entire forest and peatland habitats. For example, in Sumatra, oil palm development is responsible for the loss of 4,744 ha of mangroves, 383,518 ha of peat swamp forest, 289,406 ha of lowland forest and 1000 ha of lower montane forest.³⁷⁴ In addition to simply eradicating these ecosystems entirely, the palm oil industry contributes significantly to erosion and runoff, soil subsidence, increased flood risk, and intense forest fires. Researcher Dr. Oliver Pye explains that in October of 2015 over 2.6 million ha of forest were destroyed in wildfires that broke out in palm oil expansion areas in Sumatra and Kalimantan.

In the United States habitat loss and degradation occurs as a result of other forms of commodification including the exploitation of trees and lumber. Paper mills notoriously release chemicals and pollutants into surface and groundwater sources. In the case of the Canton Paper Mill on the Pigeon River in Tennessee, the mill's operation resulted in the river's increased temperature, turbidity, and foul odor. After years of degrading the environment, the river was lifeless, jet-black in color, too warm for many native aquatic species, and underutilized by outdoor enthusiasts.³⁷⁵ Likewise, the damming of rivers for the purposes of producing hydropower and recreational areas can be a source of habitat alteration and loss. Dams notoriously impede spawning fish by fragmenting migratory corridors, alter predator-prey relationships by altering characteristics such as flow rate and depth, increasing water temperature, and preventing sediments and nutrients from flowing naturally.³⁷⁶

Invasive Species

Lastly, non-native invasive species are a clear symptom of human commodification of the environment and its more-than human species. Invasive species are, by definition, non-native to the ecosystem of interest and negatively impact the health of other native species and the environment. Under

³⁷³ Picone et al., "Territories for Conservation?" 248.

³⁷⁴ Pye, "Commodifying Sustainability," 219.

³⁷⁵ Kays, "River in Rebound," 2023.

³⁷⁶ "How Dams Affect Water and Habitat on the West Coast," NOAA Fisheries, accessed November 2, 2025, <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/how-dams-affect-water-and-habitat-west-coast>.

the right circumstances, invasive species can be any living organism. Both the legal and illegal trade in live animals is a major source of invasive species.³⁷⁷ For example, due to the reptile trade in China, there are substantial non-native invasive turtle populations in the Yangtze River Basin.³⁷⁸ These human-facilitated movements of non-native, invasive species are harmful in that these species out-compete native species and are a major pathway for the spread of zoonotic disease. In the United States, more than 2.5 million amphibians are imported each year through the global pet trade.³⁷⁹ These species often spread pathogens including *Batrachochytrium salamandrivorans* (Bsal) and *Batrachochytrium dendrobatidis* (Bd) from captive to wild populations due to escape and release into the wild.³⁸⁰

Non-native species can also be unintentionally introduced through the commodification process of aquaculture. For example, bullfrog species are farmed around the world, including in Brazil. They represent “one of the worst invasive species in the world,” a condition directly related to the development of bullfrog farming, accidental escape, and intentional introduction.³⁸¹ Feral populations, in turn, affect native frog survival, reproductive success, and overall fitness as they can prey on native anurans and spread pathogens. Additionally, their loud, bellowing “jug-o-rum” call can actually interfere with native acoustic communication.

³⁷⁷ Julie L. Lockwood, “When Pets Become Pests, the Role of the Exotic Pet Trade in Producing Invasive Vertebrate Animals,” *Frontiers in Ecology and the Environment* 17, no. 6 (2019): 323-330.

³⁷⁸ McDonald, “Trading Animal Lives,” 848.

³⁷⁹ Brittany Decker, “UT Researchers Receive \$2.75 Million Grant to Investigate Movement of Pathogens in Wildlife Trade Networks,” *University of Tennessee Institute of Agriculture*, August 11, 2022, <https://utianews.tennessee.edu/ut-researchers-receive-2-75-million-grant-to-investigate-movement-of-amphibian-pathogens-in-wildlife-trade-networks/>.

³⁸⁰ Patrick J. Connelly et al., “United States Amphibian Imports Pose a Disease Risk to Salamanders Despite Lacey Act Regulations,” *Communications Earth and Environment* 4, no. 351 (2023): 1-10.

³⁸¹ Ribeiro and Toledo, “Brazilian Frog Farming,” 2.

ONE SWALLOW DOES NOT A SUMMER MAKE

One swallow does not a summer make. *Idiom.* A single instance does not indicate a trend. A single approach is not enough.

An Economic Approach

These health effects of commodification alter the lives of human survivors and more-than-humans entities. They are troubling to say the least; however, by thoroughly documenting and understanding their presentation, additional parallels can be drawn between these human and more-than-human bodies. The harmful symptomatologies of commodification are long-lasting, have cascading effects, and affect both visible and invisible parts of these bodies. Furthermore, their injurious nature is compounded by the fact that these symptoms are, at times, poorly documented and understood by medical practitioners, service providers, researchers, and survivors themselves. To better understand the way in which these symptomatologies arise, it is helpful to apply a transdisciplinary set of frameworks to the commodification of humans through sex trafficking and more-than-humans through environmental exploitation.

To begin, an economic approach should be considered. According to Aronowitz and Koning, “to fully understand how human trafficking thrives, one must analyze it as a market system” that occupies over 180 countries proffering its wares of mostly women and girls.³⁸² The same is true of environmental exploitation with such activities occurring in all 195 countries of the world. These market systems are thought of by economists to be “the optimal way of organizing complex global economies.”³⁸³ They are grounded by the rational choice assumption: that people engage in these practices because it creates profits.³⁸⁴ Like other economies, sex trafficking and environmental exploitation are complex networks that

³⁸² Aronowitz and Koning, “Understanding Human Trafficking,” 669; United Nations Office on Drugs and Crime, *Global Report on Trafficking in Persons 2022* (Vienna: United Nations Publications, 2022), 10-11; U. S. State Department, *Trafficking in Persons Report 2023* (Washington D.C.: U.S. Department of State, 2023), 86-92.

³⁸³ Debra Satz, *Why Some Things Should Not Be For Sale: The Moral Limits of Markets* (Oxford: Oxford University Press, 2010), 135-54; Sara Cantillon and Monica O'Connor, “Gender, Equality, and the Sex Trade,” *Women’s Studies International Forum*, 89 (2021): 1.

³⁸⁴ Alexis A. Aronowitz et al., *Analyzing the Business Model of Trafficking in Human Beings in Order to Decrease Vulnerabilities and to Better Prevent the Crime* (Organization for Security and Cooperation in Europe and the United Nations Global Initiative to Fight Trafficking), 55; Aronowitz and Koning, “Understanding Human Trafficking,” 672.

operate to efficiently make supply equal demand.³⁸⁵ In the case of sex trafficking, supply in this framework is the exploited human bodies and demand is the desire and preference for this particular commodity.³⁸⁶ Similarly, in cases of environmental exploitation, supply is the water, minerals, land, metals, animals, soil, oil, and other natural resources and demand is the desire for these goods and ecosystem services. Demand for both sets of these commodities is highly elastic, meaning it fluctuates based on price.³⁸⁷ In the age of the internet, globalization has also reshaped supply and demand by increasing both sides of the market, acting as a catalyst.³⁸⁸ Increased technology, growing consumerism and materialism, lowering of trade restrictions at international borders, growing international markets, and reduced risk of detection for traffickers are all facets of globalization that have driven supply of resources up, prices down, and demand up. Demand is further moderated by social and cultural contexts and unequal power relations. Within demand, consumers of exploited bodies can be divided into three distinct groups which create three levels of demand for this commodity. Derived demand is created at the beginning of the commodification process when “facilitators” physically take human and more-than-human bodies for the purpose of selling those bodies for a profit. These facilitators may be sex traffickers, water bottling plants, poachers preparing to ship wildlife across borders, or large-scale fishing conglomerates mining the oceans. A secondary derived demand is created in the middle of the market chain when these bodies are sometimes sold to middlemen. These could be pimps, managers, agents, grocery store chains, pharmacies, restaurants, and countless others. Lastly, primary demand is created when actual customers engage in a transaction to purchase these bodily commodities and their services. Researchers have imagined this transactional process as a global commodity chain of bodies in which commodity value flows from one point to another, passing through different nodes and phases.³⁸⁹ Phase

³⁸⁵ Cantillon and O'Connor, “Gender,” 1; Julia R. Pennington et al., “The Cross-National Market in Human Beings,” *Journal of Macromarketing* 29, no. 2 (2009): 120; Phil Williams, Trafficking in Women and Children: A Market Perspective,” *Transnational Organized Crime* 3, no. 4 (1997): 145-170.

³⁸⁶ Aronowitz and Koning, “Understanding Human Trafficking,” 672 - 673; International Labour Organization, *The Demand Side of Human Trafficking in Asia: Empirical Findings* (Bangkok: International Labour Office, 2006): 15; Richard Poulin, “Globalization and the Sex Trade: Trafficking and Commodification of Women and Children,” *Canadian Woman Studies* 22, no. 3 (2003): 38.

³⁸⁷ Siddharth Kara, *Sex Trafficking: Inside the Business of Modern Slavery* (New York: Columbia University Press, 2009).

³⁸⁸ Aronowitz and Koning, “Understanding Human Trafficking,” 673.

³⁸⁹ Shyamal K. Das et al., “Cross-National Sex Trafficking Network in Developing Countries: A Theoretical Overture Using Global Commodity Chain Approach,” *Race, Gender and Class* 18, no. ½ (2011): 233-34.

one is the gathering of raw materials (bodies, both human and more-than-human), phase two is the transportation of materials, phase three is distribution, when products are transformed into marketable commodities and the last step, phase 4, is the marketing and selling of commodities to consumers. At each phase of the global commodity chain, there are unequal power relationships and exchanges that affect supply and demand.

Additionally, there are unique characteristics of illegally trafficked and commodified bodies that make the market more perilous, specifically for victims of sex trafficking and the illegal plant and wildlife trade. Unlike other markets in which demand generates an increased supply for commodities, in these cases, increased supply can also increase demand and vice versa.³⁹⁰ These bodies have unique selling points, “specific features or attributes that differentiate one product from similar products.”³⁹¹ Essentially, trafficked bodies have unique properties that distinguish them from non-trafficked bodies. These elements further influence demand and include malleability, youth, rarity, supposed medicinal properties, and exoticism. Malleability can be defined as the ability of a consumer to force a body to do anything they want through physical and psychological violence and coercion. The bodies bought and sold as commodities in sex trafficking and the illegal plant and wildlife trade cannot or are unlikely to resist, escape, or cooperate with authorities and are, thus, malleable. This malleability drives up demand. Similarly, the youth, exoticism, and rarity of many trafficked bodies are unique selling points that increase demand due to consumer obsession with certain species, virginity and innocence, myths about the restorative powers of young women and girls, the surrealist otherness that being with a “foreign” body creates.³⁹² Lastly, human bodies are commodities that are doubly valuable as they act as both a good and a service, further driving up demand.³⁹³

³⁹⁰ Anderson and O'Connell Davidson, *Is Trafficking in Human Beings Demand Driven?* 41; Aronowitz and Koning, “Understanding Human Trafficking,” 675.

³⁹¹ Aronowitz and Koning, “Understanding Human Trafficking,” 676; Kevin Bales, *Understanding Global Slavery: A Reader* (University of California Press, 2005).

³⁹² Aronowitz and Koning, “Understanding Human Trafficking,” 679-80; Donna M. Hughes, “Best Practices to Address the Demand Side of Sex Trafficking,” *Women's Studies Program University of Rhode Island* (2004): 8; Jini L. Roby and Jacob Tanner, “Supply and Demand: Prostitution and Sexual Trafficking in Northern Thailand,” *Geography Compass* 3, no. 1 (2009): 95.

³⁹³ Poulin, “Globalization and the Sex Trade,” 39.

With this understanding of how the exploited body can become commodities, it is perhaps easier to understand many of the effects. Under this framework, a corruption and degradation of value occurs when one “turn[s] all human relationships into transactions and treats all things in life as if they were commodities.”³⁹⁴ Commodities, in this case human and more-than-human bodies, can be corrupted when placed under normative market conditions.³⁹⁵ Essentially, this is because bodies are not use goods, defined as economic goods suitable for market distribution. Instead, they are value goods, things that have intrinsic moral value making them unsuitable for the market.³⁹⁶ When individuals or companies buy, sell, and trade in bodies, they ignore the fact that the commodity market is not ethically neutral, especially when things that should not be for sale become purchasable. When a price is put on a body without its consent, this inevitably alters that body’s meaning, and value.³⁹⁷ This can be conceptualized as the commercialization effect, first emphasized by Fred Hirsch as the corrosive effect of markets on nonmarket norms.³⁹⁸ Additionally, commodification is “an institution which allows certain powers of command over one person’s body by another.”³⁹⁹ When this valuation occurs in conjunction with violence, assault, and death, it transforms a body into something new, something other. While we would normally call this process dehumanization, this term prioritizes the human and is not fitting to describe both human and other than human. Let us thus use a word I created, *de-essefication*: the prefix *de-* meaning the negation of, the latin *esse* meaning essence, nature or spirit, and the suffix *-fication* for forming the noun of a very ending in *-fy* (*de-essefy*). When a body is de-essefied through commodification, a cascade of health effects are set in motion.

In the case of my body, I would argue that because of commodification, it has been nearly impossible to separate the rape and violence done to it from sense of self and personhood. When one comes to understand that their body and everything it holds is only worth a certain amount of money

³⁹⁴ Michael J. Sandel, “Market Reasoning as Moral Reasoning: Why Economists Should Re-Engage with Political Philosophy,” *The Journal of Economic Perspectives* 27, no. 4 (2013): 124.

³⁹⁵ Cantillon and O’Connor, “Gender,” 2.

³⁹⁶ Rahel Jaeggi, “The Market’s Price,” *Constellations* 8, no. 3 (2001): 401.

³⁹⁷ Sandel, “Market Reasoning,” 121-127.

³⁹⁸ Fred Hirsch, *The Social Limits to Growth* (Harvard University Press, 1976), 84.

³⁹⁹ Julia O’Connell Davidson, *Prostitution, Power and Freedom* (Polity Press, 1998), 9.

which, once exchanged, gives another person the rights over that body, this is nearly impossible to endure while maintaining physical and psychological well-being. In these situations in which inequality is one of the commodities being transacted, staying alive is the only thing that matters. Both the brain and body are in a perpetual state of survival mode because they no longer know how to exist as humans who are valued and respected.⁴⁰⁰ With the realization that one is nothing more than a commodity, it becomes quite apparent that one's body and personhood is expendable. It is as though the human body has become the loser in a state of pareto efficiency in which no one can be made better off without someone becoming worse off. The body always loses when it is trafficked and commodified and, because mind, body, sex, and intimacy are inextricably linked, it should not be surprising that the effects are physical, emotional, social, and psychological in nature. Everything is lost; there is no agency and no self when one's intrinsic value is reduced to their corporeal worth alone.

An Anthropological Approach

While these economic approaches to understanding the effects of commoditization on survivors of sex trafficking are helpful in many ways, difficulty arises because “most mainstream economists prefer to sidestep questions of ethics or morality as a purely private concern asserting their disciplines independence from normative concerns.”⁴⁰¹ Similarly Sandel argues that contemporary economists conceive of their discipline as a value-neutral science with clear independence from moral and political philosophy. However, he continues, as “market values and market reasoning increasingly reach into spheres of life previously governed by nonmarket norms,” there is an increasing need for economics to engage with other disciplines in order to decide what should and shouldn't be for sale.⁴⁰² Therefore, it is also necessary to approach the issue of commodification of bodies from an anthropological perspective, specifically through the lens of political ecology. Political ecology can be understood as a subfield of anthropology that examines “how and why economic structures and power relations drive environmental

⁴⁰⁰ Mumey et al., “Mental Health Needs,” 187.

⁴⁰¹ Cantillon and O'Connor, “Gender,” 7.

⁴⁰² Sandel, “Market Reasoning,” 121.

change in an increasingly interconnected world.”⁴⁰³ This framework can be applied to natural environments and landscapes, as well as human and more-than-human bodies which themselves act as environments upon which economic structures and power relations drive change through commodification. In conjunction with this approach, the anthropological work of Arjun Appadurai, Igor Kopytoff, and Lesley Sharp on commodities and the social life of things can be used to augment an economic understanding of commoditization and better understand how this process affects commodified beings.⁴⁰⁴

Whereas the previously described economic approaches to commoditization failed to clearly define commodities, Appadurai, Kopytoff, and Sharp are much more precise and definitive. As previously described, for Appadurai a commodity is an object of economic value. Economic value is a definite sum arising from demand and exchange. Commodities are specific types of things with social potential that are intended for exchange and that circulate in different regimes of value. They have social lives, can be exchanged, and are differently valued by different individuals and in different contexts. Kopytoff agrees that commodities are specific types of things with use value that can be exchanged and specifies that a thing may be a commodity to one person and at one point in time but not another. He also attempts to analyze these commodities with a biographical approach, asking the following questions of things: *Who made it? What is its provenance? What has its life been so far? What is an ideal life for it? How does its use change with time? What happens when it stops being useful?* Similarly, Appadurai attempts his analysis of the social life of things by defining specific parts of what he calls the commodity situation in which a commodity’s “exchangeability...for some other thing is its socially relevant feature.”⁴⁰⁵ Within the commodity situation, there are three parts, the commodity phase, commodity candidacy, and commodity context. In the commodity phase, things move in and out of the commodity state. Commodity candidacy is less temporal and refers to the criteria defining the exchangeability of things in different

⁴⁰³ Jason Roberts, “Political Ecology,” in *The Open Encyclopedia of Anthropology*, ed. Felix Stein, last modified 2020, <https://www.anthroencyclopedia.com/printpdf/1081>.

⁴⁰⁴ Appadurai, “Introduction,” 4; Kopytoff, “The Cultural Biography of Things,” 66-67; Lesley Sharp, “The Commodification of the Body and Its Parts,” *Annual Review of Anthropology* 29 (2000): 287-328.

⁴⁰⁵ Appadurai, “Introduction,” 13.

contexts. Lastly, the commodity context is that which brings together different actors from different systems to link commodity candidacy to commodity phase. Within different contexts, there exist different regimes of value for particular commodities. Value coherence is not always constant from one situation to the next. A variety of different types of commodities can exist in the commodity phase including commodities by diversion. These are “objects placed into a commodity state though originally specifically protected from it.”⁴⁰⁶ Kopytoff explains this drive to commoditization as a “process of becoming rather than as an all-or-nothing state of being.”⁴⁰⁷ Appadurai notes that the “flow of commodities in any situation is a shifting compromise between socially regulated paths and competitively inspired diversions” that seek to place things not meant to be commodities into commodity status in favor of profits.⁴⁰⁸ Likewise, Kopytoff understands this desire for commoditization as the “drive to extend the seductive idea of exchange to as many items as the existing exchange technology will comfortably allow.”⁴⁰⁹ However, it is important to recognize that the commodity phase is only one part of the life of some things; a commodity phase doesn’t exhaust the life history of a thing according to Appadurai and Kopytoff. There is life after commodification and this life is composed of short and long-term patterns in the social life of things. Singularization, according to Kopytoff, is a natural counterdrive to commoditization. Humans recognize that some things should not be commodities and these ethical value systems stand in unresolvable conflict with economic markets.

These descriptions of commodities can be applied to the buying and selling of human and more-than-human bodies. Based on Appadurai and Kopytoff’s definitions, it is clear that bodies become commodities once they have economic value, can be exchanged, and have different values based on context and consumer. It is also apparent that these commoditized bodies have social lives. They are not “simply things in and of themselves or objects whose worth lies in exchange value alone,” Sharp explains.⁴¹⁰ Basing her argument on Mauss, Sharp further details that these exchanged bodily

⁴⁰⁶ Appadurai, “Introduction,” 16.

⁴⁰⁷ Kopytoff, “The Cultural Biography of Things,” 73.

⁴⁰⁸ Appadurai, “Introduction,” 17.

⁴⁰⁹ Kopytoff, “The Cultural Biography of Things,” 72.

⁴¹⁰ Sharp, “The Commodification of the Body,” 291.

commodities are entangled with a variety of meanings framed by sociopolitical concerns and power dynamics. The chaotic and dynamic nature of the social life of a commodity is utterly detrimental to the psychological well-being of exploited beings. One can imagine a body, human or more-than-human, forced into Appadurai's commodity situation through the process of diversion. In the commodity candidacy phase, criteria are defined to make different bodies exchangeable for different amounts of money or types of goods. Perhaps prices for different services are developed based on the age, ethnicity, nationality, gender, rarity, purity, nutrient content, or medicinal properties of different bodies. Next, within the commodity context phase, consumers and producers haggle amongst their different regimes of value and imperfect forms of knowledge, hoping to enact an exchange. This varies depending on where bodies are being exploited, who is trying to purchase them, and the unique selling points of the body in question. Lastly, in the commodity phase, different bodies move in and out of the commodity state as new bodies are found, transported, and forcibly thrust into the market until they exit this phase through consumption, escape, rescue, or death. These are the options for singularization of the commodity of exploited bodies.

With this perspective in mind, it is easier to understand the magnitude of effects observed in survivors of sex trafficking and more-than-human commodified bodies. These beings, in many cases things that were never meant to enter a commodity state, were metaphorically and literally diverted into this economy. Their bodies and their notion of self underwent a process of becoming a commodity that was continuous and incessant, never remaining constant or reliable. In my own experience, the social life of commodities, a theory that gives agency back to things, is ironically what eliminates the agency of exploited bodies. The not knowing of how one will be valued, who one will be valued by, where one will go, and what will become of one's self and body once value declines creates unimaginable anxiety, fear, horror, and hopelessness. Not knowing one's trajectory as a commodity feels impossible. It is unsurprising that those who survive this exploitation do not know how to be a singularity once they exit the commodity state. As Sharp explains, the body, self, and personhood are inextricably linked and the sense of all three is obscured by commodification due to the dehumanization [de-essefication] and

objectification intrinsic to this process. Sharp characterizes the effects of this commodification as a “profound sense of social death.” I propose that this is not only a social death, but the beginnings of a physical and mental death as well. Mind, body, water, and Earth can endure an exceedingly high degree of abuse, but there is a point at which their decline becomes imminent. Commoditization of the body and its uses is one such point.

A Biomedical Approach

This economic and anthropological framework for understanding the trauma and effects of commoditization of bodies is not only intuitive; it is supported by scientific evidence underpinning the stress response as well. Since the work of physiologist Walter Bradford Cannon and endocrinologist Hans Selye, medical practitioners and researchers have understood that internal and external stimuli can become stressors which subsequently result in a cascade of neural and endocrine effects in both human and more-than-human species. These neural and endocrine effects represent the body’s attempt to reestablish an equilibrium known as homeostasis.⁴¹¹ Stress can be defined as “any stimulus that disrupts or threatens homeostatic balance.”⁴¹² Common stressors include thirst, hunger, physical trauma, temperature, noise, and psychological trauma.⁴¹³ The human body’s stress response is a mechanism for restoring this homeostatic balance and prioritizing survival and self preservation through complex interactions between the hypothalamic-pituitary-adrenal (HPA) axis, the immune system, and the autonomic nervous systems. This is also the mechanism at work in more-than-human vertebrates: in birds and mammals, neuroendocrine responses are facilitated by the HPA axis and in fish, amphibians and reptiles, responses are mediated by the very similar hypothalamic-pituitary-inter-renal (HPI) axis.⁴¹⁴ This response framework is known as the general adaptation syndrome. One primary component of this mechanism is the end products of the HPA axis, cortisol and other glucocorticoids, naturally produced steroid hormones.

⁴¹¹ Hans Selye, “Stress and the General Adaptation Syndrome,” *British Medical Journal* (1950): 1383-1392; Walter Bradford Cannon, *Bodily Changes in Pain, Hunger, Fear, and Rage* (Braford, 1953).

⁴¹² Georgina Russel and Stafford Lightman, “The Human Stress Response,” *Nature Reviews Endocrinology* 15, no. 9 (2019): 531.

⁴¹³ Giulio Perrotta, “Maladaptive Stress: Theoretical, Neurobiological and Clinical Profiles,” *Archives of Depression and Anxiety* 7, no. 1 (2021): 1.

⁴¹⁴ Ben Dantzer et al., “Measures of Physiological Stress: A Transparent or Opaque Window into the Status, Management and Conservation of Species?” *Conservation Physiology* 2 (2014): 2.

When a body is stressed, levels of adrenaline and cortisol rise, triggering what Cannon termed the “fight or flight response.”⁴¹⁵ These hormones help the body access energy stores via promotion of gluconeogenesis, increase blood flow to muscles and the brain, and maintain alertness and cognitive functioning. However, under prolonged stress, cortisol remains elevated and can have maladaptive effects. Long-term exposure to glucocorticoids results in decreased immune function and inhibition of growth, wound healing, digestion, and feelings of pain. These effects can lead to cardiovascular disease, increased susceptibility to infections, cancer, gastroduodenal ulcers, decline in mental abilities, and mental health disorders including major depressive disorder.⁴¹⁶ This has been documented in both human and more-than-human bodies, such as American kestrels (*Falco sparverius*), northern spotted owls (*Strix occidentalis caurina*) maned wolves (*Chrysocyon brachyurus*), black howler monkeys (*Alouatta pigra*), elk (*Cervus elaphus*), and countless other species.⁴¹⁷ With this system in mind, it is easy to understand that bodies who experience the stress of commodification are exposed to numerous stressful stimuli that may include physical trauma, fear, hunger and decreased food sources, thirst, noise and light exposure and pollution, habitat degradation, fatigue and sleep deprivation, sexual assault and violence, extreme heat or cold, threats of violence, and psychological torture and manipulation. Because these stressors are typically long-lasting and chronic, glucocorticoid exposure is prolonged, leading to the cascade of deleterious physiological and psychological effects.

Better understanding of these health effects and their underlying mechanisms enables me to similarly improve my understanding of myself, my materials and the more-than-human species with whom I work. I’m able to frame what has happened to our bodies in an orderly fashion in my mind. I understand why my body behaved and continues to behave the way it does, driven by physiological mechanisms beyond my brain’s control. There are reasons for why I feel the way that I do and it is not

⁴¹⁵ Russel and Lightman, “The Human Stress Response,” 525.

⁴¹⁶ Perrotta, “Maladaptive Stress,” 4; Russel and Lightman, “The Human Stress Response,” 525.

⁴¹⁷ Erin H. Strasser and Julie A. Heath, “Reproductive Failure of a Human-Tolerant Species, the American Kestrel is Associated with Stress and Human Disturbance,” *Journal of Applied Ecology* 50, no. 4 (2013): 912-919; Katherine M. Spencoski et al., “Adrenal Activity in Maned Wolves is Higher on Farmlands and Park Boundaries than Within Protected Areas,” *General and Comparative Endocrinology* 179, no. 2 (2012): 232-240; Lisa S. Hayward et al., “Impacts of Acute Long-Term Vehicle Exposure on Physiology and Reproductive Success of the Northern Spotted Owl,” *Ecosphere* 2, no. 6 (2011): 1-20; Rodolfo Martinez-Mota et al., “Effects of Forest Fragmentation on the Physiological Stress Response of Black Howler Monkeys,” *Animal Conservation* 10, no. 3 (2007): 374-379.

simply all in my head or me slowly spiraling the drain, descending into entropy and madness. With such knowledge, comes power. When we comprehend the why, there arises the possibility of treating these symptoms with medical, personal, and spiritual care.

LIKE A DUCK TO WATER

Like a duck to water. *Idiom.* To take to something or adapt. Derived from the observation that young ducklings learn to swim hours after hatching.

The Uncanny and the Abject

By better understanding my own body, my materials, and the more-than-human species with whom I work, I've used my research and making practice to forge paths forward. By making kin and creating spaces in which to allow commodified bodies to remember, care for self and more-than-self is possible. However, until recently I often succumbed to the seductive possibility of simply getting by in a body that was no longer truly my own, attempting to ignore it and what was inflicted upon it. I wasn't able to lixivate the body from what was done to it until I began collaborating with more-than-humans and cultivating my linguistic capabilities. It was necessary to develop vocabulary related to both the uncanny and the abject in order to, ironically, escape the uncanny and objected body.

In relation to psychology, the uncanny was first examined by Ernst Jentsch in his 1906 work "On the Psychology of the Uncanny."⁴¹⁸ Relating the English word "uncanny" to its German form, "unheimlich," Jentsch describes that "someone to whom something 'uncanny' happens is not quite 'at home' or 'at ease' in the situation concerned and the thing is...foreign."⁴¹⁹ This foreignness contributes to the lack of orientation in individuals who encounter such an object or situation. However, because what is uncanny for one individual does not necessarily result in a similar affect in another, it is difficult to precisely define. For this reason, Jentsch suggests that it is better to investigate how the affective excitement of the uncanny arises in psychological terms, how the psychical conditions must be constituted so that the uncanny sense emerges, than to ask what it is. Therefore, Jentsch describes scenarios in which the uncanny situation arises. In general, psychical uncertainty causes an uncanny feeling. This can arise from doubt as to whether a seemingly living being is truly animate and doubt as to

⁴¹⁸ Ernst Jentsch, "On the Psychology of the Uncanny (1906)," trans. Roy Sellars, *Angelaki Journal of the Theoretical Humanities* 2, no. 1 (1997): 7-16.

⁴¹⁹ Jentsch, "Uncanny," 8.

whether a seemingly inanimate object is actually living. Movement, anatomical details, and noises can perpetuate these feelings of the uncanny. For example, when an apparently lifeless object moves or sounds like a living being, doubt arises as to its status and the uncanny endures until these doubts are resolved. Jentsch provides the example of wax figures which, at times, can be difficult to distinguish from living humans. Even when one becomes certain that they are not real, “semi-conscious secondary doubts...are repeatedly and automatically aroused anew when one looks again and perceives finer details.”⁴²⁰ Thus, the finer the mechanism and truer to nature the reproduction, the more strongly the uncanny can be felt. Additionally, Jentsch uses the example of E.T. A. Hoffman’s short story, “The Sandman”, in which the main character, Nathanael, falls in love with the daughter of a physics professor, Olimpia, only to later realize that she is, in fact, not human at all, but an automaton.⁴²¹ Her cool skin, mechanical movements, and human-like eyes contribute to the eruption of the uncanny in this situation. His is quite the helpful illustration of the uncanny, but it is also essential to note Jentsch’s more unhinged notions that women experience the uncanny more frequently due to a “weaker critical sense,” despite the fact that he elucidated the uncanny by describing a story in which a very unhinged man falls in love with a puppet.⁴²²

Unfortunately, the next scholar to take up the pursuit of describing the uncanny is no better than Jentsch: it is vital to note Sigmund Freud’s racist, sexist, and drug-fueled behaviors accompany his 1919 work, *The Uncanny*, an essential stepping stone to better understanding this concept.⁴²³ While he does merely regurgitate Jentsch’s work more than he’d likely want to admit, Freud does advance the understanding of the uncanny in several ways: his semantic investigation of the German word for uncanny, “unheimlich,” an alternative interpretation of the uncanny in Hoffman’s “The Sandman”, the notion of the double, the concept of the omnipotence of thoughts, and an explanation of the uncanny in

⁴²⁰ Jentsch, “Uncanny,” 12.

⁴²¹ E. T. A. Hoffman, *The Sandman* (1816), trans. Jolyon Timothy Hughes (Hamilton Books, 2020).

⁴²² Jentsch, “Uncanny,” 14.

⁴²³ Claudia Tate, “Freud and his ‘Negro’: Psychoanalysis as Ally and Enemy of African Americans,” *Journal for the Psychoanalysis of Culture and Society* 1, no. 1 (1996): 53-62; G. Leibeltern, “Sigmund Freud and Cocaine,” *Wien Klin Wochenschr* 11, no. 83 (1983): 765-9; Michaela Chamberlain, *Misogyny in Psychoanalysis* (Karnac Books, 2022); Sigmund Freud, *The Uncanny* (1919), trans. David McLintock (Penguin Classics, 2003).

relation to death and dead bodies. In his semantic investigation, Freud explains that *unheimlich* is the opposite of *heimlich* which means belonging to the house, familiar, intimate, homely. However, the definition of *heimlich* also includes the idea that something is concealed and kept hidden so that others aren't privy to it: something that is intimate and kept in the home, away from the eyes of others. Because *unheimlich* is the opposite, it means strange, arousing horror, eerie, and fearful. It is something that was meant to remain hidden and concealed (*heimlich*), but has come out into the open for all to see.

Importantly, Freud notes that the most interesting point here is that because *heimlich* can mean both familiar and that which is hidden, it actually comes to merge with what otherwise belongs to *unheimlich*, its antonym. The *unheimlich* is, in some way, "a species of the familiar", a home but not quite.⁴²⁴

With this definition in mind, Freud revisits Hoffman's *The Sandman*. However, he cites an alternative source of the uncanny in this story, the fear of being robbed of one's eyes. In this story, the main character, Nathanael, recalls his childhood fear of the Sandman, a mythical figure of youthful stories who was said to steal the eyes of children who refused to go to bed. For Nathanael, the Sandman became real when he observed a mysterious visitor of his father's, a lawyer who, upon noticing Nathanael spying on them, threatened to throw embers from the fireplace into the boy's eyes. Later in life, after falling in love with Olympia, Nathanael goes to seek her hand in marriage only to find the two men, one of whom turns out to be the treacherous lawyer from his childhood, fighting over her body. Her eyes have popped out and are on the floor. For Freud, the sense of the uncanny is most directly experienced through Nathanael's fear of being robbed of his eyes. The notion of the uncanny in this sense goes beyond the reader's or Nathanael's intellectual uncertainty, what Jentsch claimed as the primary cause for the eruption of the uncanny. The reader understands what is going on, but this doesn't diminish the effect of the uncanny. Instead, Freud claims, it is that a "strong and obscure emotion" is aroused by the threat of losing a vital organ, an emotion that resonates strongly with readers due to the castration complex.⁴²⁵ Freud concludes that one can "trace back the uncanny element in "The Sandman" to the anxiety caused by

⁴²⁴ Freud, *The Uncanny*, 134.

⁴²⁵ Freud, *The Uncanny*, 140.

the infantile castration complex.”⁴²⁶ This, of course, is a tired and repeated stretch made by Freud, but an important one in that it demonstrates that sources of the uncanny vary widely by individual.

More helpfully, Freud goes on to discuss several other, more general, sources of the uncanny, including the idea of the double, a doppelganger. While historically, a person’s double may have served as a defense against mortality, it can become “the uncanny harbinger of death” in that the repetition of the same thing can leave one with a helpless and uncanny feeling.⁴²⁷ The idea of the double, the unintentional return, and the related compulsion to repeat all sustain the notion of the uncanny. Similarly, Freud cites the principle of the omnipotence of thoughts as a source of the uncanny. Early in the development of human civilization, people held an animistic view of the universe characterized by the concept that magic and the omnipotence of thoughts acted in the world to create people, animals, things, and spirits. As humans developed and became “enlightened”, these animistic views decreased as people came to better understand the living world. However, the animistic phase of development left behind residual traces that still make themselves felt, according to Freud. Therefore, things that now seem uncanny tend to bring up these repressed traces. Thus, “there must be one group in which it can be shown that the frightening element is something that has been repressed and now returns.”⁴²⁸ Freud calls this the secret nature of the uncanny, the idea that it is “nothing new or strange but something that was long familiar to the psyche and was estranged from it only through being repressed.”⁴²⁹ One of Freud’s final helpful points regarding the uncanny is the relation to death, dead bodies, spirits, and ghosts. He wisely notes that in no other sphere has our thinking changed so little since primitive times as in our relation to death. Due to the strength of human emotions and the uncertainty regarding the biological basis for death, the human unconscious is unreceptive to the idea of mortality and fear of the dead and dying remains ready to manifest itself given any encouragement.

⁴²⁶ Freud, *The Uncanny*, 140.

⁴²⁷ Otto Rank, *The Double: A Psychoanalytic Study* (1971), trans. Harry Tucker Jr. (The University of North Carolina Press, 2011).

⁴²⁸ Freud, *The Uncanny*, 147

⁴²⁹ Freud, *The Uncanny*, 148

In the years since Freud's publication, many have taken up the concept of the uncanny for their own use. Lacan relates the concept of the uncanny to anxiety in his seminar on this topic.⁴³⁰ After setting Freud's *Uncanny* as required reading for his seminar participants, Lacan describes that *unheimlich* relates to "that which may not be said" and "appears at the place where the minus-phi should be."⁴³¹ This minus-phi is described as the phallic signifier for castration. It signifies absence or the negative object. The uncanny results when there is an absence of this absence, what Lacan calls a lack of Lack. The uncanny occupies this space where there should be lack so that "lack happens to be lacking."⁴³² Like Freud, Lacan connects the uncanny and castration, however Lacan claims the *unheimlich* replaces castration (minus-phi) rather than being exposed by castration anxiety. Thus, one may simplify this as Alexandra Kokoli does, to describe that Lacanian anxiety is the affect and Freudian uncanny is the phenomenon evoking such a response. Lacan also describes the uncanny as entering suddenly, all at once during the mirror phase, a stage in early childhood development during which one establishes the relationship between self and other, inner and outer worlds, and subject and object. Additionally, Lacan notes that the uncanny can emerge under particular circumstances in which an object seems to become a subject. He uses the example of a statue that one finds desirable and pleasing, asking "what could be more *unheimlich* than to see it come to life, that is to show itself as a desirer?"⁴³³ Like Freud, Lacan clearly finds something uncanny in the idea of objects taking on the life-like qualities of living organisms.

Published shortly after Lacan's *Anxiety* in 1970, Masashiro Mori's "Uncanny Valley," was initially fairly obscure, but slowly gained acclaim for its simple but powerful premise and visualization of the uncanny.⁴³⁴ Mori describes the human drive to create realistic robots and prosthetics that strongly resemble real humans and body parts. As these robots become more lifelike, so too does human affinity for them grow. This is visualized graphically as an increase in both the x and y axis, a curve going "up." However, when one interacts with prosthetics or robots that resemble humans, it can be startling that these

⁴³⁰ Jacques Lacan, *The Seminar of Jacques Lacan, Book X: Anxiety* (1962-63), trans. A. R. Price (Polity Press, 2014).

⁴³¹ Lacan, *Anxiety*, 42, 75.

⁴³² Lacan, *Anxiety*, 42.

⁴³³ Lacan, *Anxiety*, 271.

⁴³⁴ Masashiro Mori, "The Uncanny Valley (1970)," *IEEE Robotics and Automation Magazine* 19, no. 2 (2012): 98-100.

inanimate things have an inanimate texture and temperature, resulting in an eerie and uncanny sensation. Graphically, this is represented by the uncanny valley; the affinity for these objects (the y axis) decreases dramatically as human likeness (the x axis) increases. When these prosthetics and robots can move, this further changes the shape of the uncanny valley. On the other side of the uncanny valley is another peak representing living humans. Moving from this second peak back into the uncanny valley is imagined by Mori as death. Importantly, Mori notes that humans are well-equipped and intended to feel the eerie sensation of the uncanny, likely as an “integral part of our instinct for self-preservation.”⁴³⁵ It is logical, then, that corpses, members of different species and foreign entities incite the uncanny as these may represent sources of danger.

Given that Freud was wildly misogynistic, racist, and attempted to treat patients with cocaine which he also used quite liberally himself and Lacan was accused of abusing positive transference in patients to make them dependent on him, as well as increasing the number of patients he could see in a day by significantly shortening his session lengths, it is also vital to consider a female perspective on the uncanny.⁴³⁶ Alexandra Kokoli published *The Feminist Uncanny in Theory and Art Practice* in 2016, using the return of the repressed as a starting point from which to propose the ‘feminist uncanny’. This term describes the “unsettling quality that many cultural artefacts informed by feminism continue to possess” while also “pointing at a critical encounter” between feminism and the uncanny.⁴³⁷ For Kokoli, feminism has an unexpected ally in the uncanny as feminists work to claim their rightful place in fields of aesthetics, creative practice, and art history. This is due to the fact that the subversive strategies used by feminists involve a process of defamiliarization, of uncovering the strangeness of what is assumed to be known. In other words, the eerily familiar return of the repressed is a facet of both feminist strategies and the uncanny. Furthermore, Kokoli finds that the uncanny can act as a “cipher of the collaboration between

⁴³⁵ Mori, “The Uncanny,” 100.

⁴³⁶ Tate, “Freud,” 53-62; David Macey, “Introduction,” in *The Four Fundamental Concepts of Psychoanalysis* (1973), ed. Jacques Alain Miller and David Macey (Penguin Books, 1994): ixx-iv; Frank J. Priol, “Jacques Lacan, 80, A Leader of Psychoanalysis in France,” *New York Times*, September 11, 1981, <https://www.nytimes.com/1981/09/11/obituaries/jacques-lacan-80-a-leader-of-psychoanalysis-in-france.html>; G. Lebzelter, “Sigmund Freud and Cocaine,” *Wien Klin Wochenschr* 11, no. 83 (1983): 765-9. Michaela Chamberlain, *Misogyny in Psychoanalysis* (Karnac Books, 2022).

⁴³⁷ Kokoli, *The Feminist Uncanny*, 3.

feminism and the theoretical apparatus of psychoanalysis.”⁴³⁸ Through the uncanny, feminism can come together with psychoanalysis in order to realize its most radical potential.

After reviewing the work of Freud and Lacan and noting their disappointing insistence on the prevalence of the castration complex, Kokoli demonstrates links between feminism and the uncanny. She describes that the feminine is woven through the psychoanalytic uncanny from its inception, citing how Freud projects the castration complex onto female bodies, perceived as having been already castrated by the father. Similarly, Kokoli explains that for Freud, the mother’s body is “emblematic of a feeling of at-home-ness which has however been repressed, and which thereby renders this body un-homely.”⁴³⁹ It is apparent that in early psychoanalysis woman functioned as a trope for uncanniness. Women’s uteruses are homes and yet they incite fear and horror in men who do not fully understand female reproduction and would rather use these “Other” bodies’ differences in order to retain power and control over them. Female bodies are associated with home and new life and, simultaneously, fear and death as they unsettle the men who seek to control them, men like Freud and Lacan. The feminist uncanny, therefore, alludes to, displaces, and revises the psychoanalytic concept of the uncanny in transformative and profound ways. With this “return” of a feminist uncanny, there is, of course, discomfort and fear, but this does not result from some monstrous or grotesque feminine ogre. Rather, its scars are what is uncanny and its return against the odds is terrible. Thus, the feminist uncanny is “perpetually suspended between revision and revenge.”⁴⁴⁰

An eminent author working with the related concept of the abject and cited in Kokoli’s *The Feminist Uncanny* is Julia Kristeva. It is arguable that one cannot have a conversation about the uncanny without at least referencing Kristeva’s notion of the abject. The abject is neither subject nor object. This means that it doesn’t have a definable object and is difficult to name or imagine. It has only one quality of an object: being opposed to I.⁴⁴¹ The abject threatens annihilation of “I”, of self, and humans continuously reject and repel this threat. The abject is violent, dark, radically excluded and represents a place where

⁴³⁸ Kokoli, *The Feminist Uncanny*, 4.

⁴³⁹ Kokoli, *The Feminist Uncanny*, 21.

⁴⁴⁰ Kokoli, *The Feminist Uncanny*, 39.

⁴⁴¹ Julia Kristeva, *Powers of Horror: An Essay on Abjection*, trans. Leon S. Roudiez (Columbia University Press, 1982).

meaning collapses. This ambiguous, meaningless threat has a huge weight and this weight is what threatens to crush the self. If one acknowledges this abject, it pulverizes identity, order, and systems. The abject disturbs in this manner and fails to respect borders, positions, and rules. Therefore, one must resist the abject which beseeches and cries out for attention. One must expel it, and denounce assimilation. However, the abject can infect life. When a subject finds that the impossible constitutes its very being, it is abject. Abjection of self occurs when a subject realizes that all its objects are based on loss, a loss that is the foundation of the subject's being. This demonstrates that abjection is recognition of the want on which any being, meaning, language or desire is founded. It is logical then that abjection is situated prior to symbolic order, the world of language, preserving what existed in the pre-objectal relationship. This is one reason it is difficult to imagine and describe the abject. Kristeva gives examples including rancid food that makes one gag and corpses that demonstrate what one thrusts aside in order to live. She also clearly explains that the abject is different from the uncanny, noting that the abject is more violent and completely unfamiliar without even the shadow of memory. It is "immoral, sinister, shady, a terror that disassembles, a hatred that smiles, a passion that uses the body for barter, a debtor who sells you up, a friend who stabs you."⁴⁴² Therefore, through the psychical process of abjection, one must reject that which threatens identity's boundaries in order to remain safely within the conditions of a living being.

Flawed as they undoubtedly are, comprehending these psychoanalytic concepts provides the language with which to verbalize what happened and continues to occur at the site of my body. I had come to accept the fact that I would live, bound by this body which was always already immediately familiar and hauntingly foreign. The exploited body as "unheimlich", a home but not quite, unsettling in a familiar way, made sense to me. My body is literally where I reside, a home of sorts, and yet it was foreign and unsafe as though something was off inside of me. The men who sought to control, exploit and commodify a body like mine, immensely complicated and uncanny to them from the start, left me with this burdensome, tired, terrifying thing that I could not convince to behave or think as it did before. When we don't understand something, we often cast it out, refusing to look at or acknowledge it and this is

⁴⁴² Kristeva, *Powers of Horror*, 4.

certainly what I did, abjecting my own body because it functioned as a reminder of what was. I interpreted my body as *thing*, “other”, outside of normal boundaries. My body caused horror. For what is more terrifying than returning home to find that someone else has been there, used your things, left everything in disarray and vanished, perhaps to return at a later date? Isn’t this the stuff horror films are made of? So of course I wanted to throw it away, spit it out, gargle with antiseptic, pour rubbing alcohol over my face, run away, pull out my hair, and pick away at my skin. It was disgusting. This was the after of commodification. But it was also the stage before, a pre-linguistic phase. With research, writing, and making, I could describe it, take power over it, and feel a little bit better. I feel a little more okay every time I return to this process, and unavoidably, my body. My art gives control back to me and takes away the burden of being in this body alone. It begins to function as a space in which to re-remember and an act of care.

Doublethink

In Bessel van der Kolk’s seminal essay “The Body Keeps the Score,” published ten years before his book by the same name, he explains that the psychological effects of trauma are expressed as changes in the biological stress response.⁴⁴³ He expands upon work done by L. C. Kolb on the bimodal response to trauma, explaining that individuals who are traumatized experience chronic hyperarousal, leading to avoidance of injurious stimuli and compensation through emotional numbing. Essentially, trauma leads to a loss of affective modulation and a decrease in capacity to utilize feelings as indicators of danger: innocuous stimuli may be perceived as potential threats. Survivors of trauma may move immediately from experiencing a stimulus to responding without a “normal” psychological assessment of what it is they’re experiencing. This response often continues years after the trauma and demonstrates the inability of people with PTSD to successfully integrate the memory of trauma into existing schema. Physiologically, this is due to the hormonal stress response, neuroendocrine abnormalities, and altered functioning of the limbic system: intense stress results in the release of endogenous hormones like cortisol and

⁴⁴³ Bessel van der Kolk, “The Body Keeps the Score: Memory and the Evolving Psychobiology of Post Traumatic Stress,” *Harvard Review of Psychiatry* 1, no. 5 (1994): 253-65.

norepinephrine which, in the short-term, help the body mobilize itself to cope with the stressor, but in the long-term, result in a negative feedback loop of cascading deleterious symptoms. Similarly, fear and stress activate the release of endogenous opioids, resulting in analgesia, numbing, and the inability to store traumatic experiences in explicit memory, also known as declarative or semantic memory. Instead, trauma is very much associated with implicit memory, a system that controls conditioned emotional responses, habits, and sensorimotor sensations. The result is that trauma interferes with conscious recall of an experience but continues to trigger harmful reactions on a more somatic, instinctual level. More recently, scientists have continued to demonstrate this dual representation model: traumatic events are coded in implicit-somatic memory which is often not synced with autobiographical memory.⁴⁴⁴ Rather than a feeling of normalcy and ease with their bodies, individuals with PTSD experience intrusive bodily sensations and re-experiencing that reflect the implicit memory of trauma. Thus, the body may “become a stage for re-experiencing pain and suffering” and trauma may result in distrust and estrangement from the body which is no longer a safe entity.⁴⁴⁵ In this way, threatening stimuli is not isolated or limited to external factors alone, but can become embodied in the very experience of having a body.⁴⁴⁶ Trauma has the potential to “shatter basic assumptions regarding the body as a well-functioning, comforting and safe entity for the self to be embodied.”⁴⁴⁷

This living within a body that is no longer a home is, conceivably, what leaves so many survivors of trauma without words or language to be able to describe what occurred, a phenomenon often described as speechless terror. It is why in his book, van der Kolk concludes that trauma is “not just an event that took place sometime in the past, it is also the imprint left by the experience on mind, brain and body.”⁴⁴⁸ Similarly, Judith Lewis Herman explains that the ordinary response to traumatic experiences is to attempt to banish these unspeakable violations from consciousness because to speak about atrocities is to bring

⁴⁴⁴ Chris R. Brewin, “The Nature and Significance of Memory Disturbance in Posttraumatic Stress Disorder,” *Annual Review of Clinical Psychology* 7(2011): 220.

⁴⁴⁵ Noga Tsur et al., “Post-Traumatic Orientation to Bodily Signals: A Systematic Literature Review,” *Trauma, Violence and Abuse* 24, no. 1 (2023): 175.

⁴⁴⁶ Noga Tsur et al., “The Traumatized Body: Long-Term PTSD and its Implications for the Orientation Towards Bodily Signals,” *Psychiatry Research* 261 (2018): 286.

⁴⁴⁷ Tsur and Talmon, “Post-Traumatic Orientation,” 180.

⁴⁴⁸ Van der Kolk, “The Body Keeps the Score,”

them back to life and, simultaneously, invite judgment and doubt.⁴⁴⁹ However, she also argues that remembering and retelling are prerequisites for restoration of the social order and healing of victims. Thus, survivors of trauma are wrought by the need to preserve secrecy and the need of their experience to resurface through either language or symptomatology. This central dialectic of psychological trauma gives rise “to complicated, uncanny alterations of consciousness,” often referred to as doublethink or dissociation.⁴⁵⁰ The idea that a return to trauma creates the uncanny and the abject is clearly an idea echoed by artist and author Việt Lê in his book, *Return Engagements: Contemporary Art’s Traumas of Modernity and History in Sài Gòn and Phnom Penh*, in which he explains that to return to trauma is haunting.⁴⁵¹ However, despite the nature of the return, there is often a catharsis in this act. Herman explains that when barriers of denial and repression are broken down, creative energy can be released.

The idea that there is a simultaneous, corporeal need to forget and re-experience, stay quiet and speak out is a central dialectic to living in a commodified body like mine. The notion of doubling resonates so strongly within me. To have such vocabulary to describe what I have felt and continue to feel is unbelievably powerful. There is a control in language. There is also power in allowing the body to re-remember, re-experience, and re-tell in its own way. I have not always appreciated how these experiences come up unexpectedly and at inconvenient times, seeming to transport me back in time and space. However, these inopportune re-experiences became more manageable as I actively provide myself with the time, space, and substrate in which to purposefully revisit. Heather Swanson and Anna Tsing et al. have called these returns to multiple pasts “ghosts,” but I hardly think this is appropriate.⁴⁵² Both these returns, their memories, and the bodies that exist there are vibrantly alive with power that is concomitantly both frightening and comforting. They do not need to be separated from the present because they invade the here and now with just as much potency and force as do you or I. There is no need to call them ghosts. By intentionally going back during my making practice, there is still discomfort,

⁴⁴⁹ Judith Lewis Herman, *Trauma and Recovery* (Basic Books, 1992), 1-2.

⁴⁵⁰ Herman, *Trauma and Recovery*, 1.

⁴⁵¹ Việt Lê, *Return Engagements: Contemporary Art’s Traumas of Modernity and History in Sài Gòn and Phnom Penh* (Duke University Press, 2021), xii.

⁴⁵² Heather Swanson and Anna Tsing et al. “Introduction: Bodies Tumbled into Bodies,” in *Arts of Living on a Damaged Planet*, ed. Anna Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt (University of Minnesota Press, 2017), G2.

dread, and anxiety. However, the materials and content of my art are there with me, with my body. There is still some degree of safety here. I've begun to think that there is a synergistic, multi-directional flow of protection among myself and the other bodies with whom I work. Thus, I've come to view the act of making as one of radical care.

Radical Care

Although definitions vary, the underlying characteristics of care are its relational nature, its connection to maintenance, affect, and politics, the notion that it can be both oppressive and helpful, and the concept that it is not just a feeling, but an action. In her book, *Matters of Care*, María Puig de la Bellacasa describes that care passes within, across and throughout things.⁴⁵³ She notes that care is not a uniquely human matter and is vital in interdependent worlds. This idea that care connects different entities is echoed by Jacqueline Millner and Gretchen Coombs in their book, *Care Ethics and Art*. They explain that the Covid-19 pandemic foregrounded this interconnectedness of “interwoven bodies, selves and environment.”⁴⁵⁴ Similarly, Hi‘ilei Julia Kawehipuaakahaopulani Hobart and Tamara Kneese describe in their article, “Radical Care: Survival Strategies for Uncertain Times,” that care is a “relational set of discourses and practices between people, environments, and objects.”⁴⁵⁵ In her manifesto for radical care, Tian Zhang also imagines the relational nature of care as circulating in terms of ecosystems that are complex and interconnected networks of giving and receiving.⁴⁵⁶ Within these networks of relational care, outcomes can be good or bad, oppressive or freeing. Hobart and Kneese argue that care is inseparable from systemic inequality and power structures that dictate who receives care and who is required to care for others. However, they also explain that care is equally associated with positive political change and hope.⁴⁵⁷ Likewise, Millner and Coombs argue that care work is systemically devalued, invisible and gendered while also necessary to maintain, continue and repair.⁴⁵⁸ Zhang echoes the sentiment that care is

⁴⁵³ María Puig de la Bellacasa, *Matters of Care* (University of Minnesota Press, 2017), 1.

⁴⁵⁴ Jacqueline Millner and Gretchen Coombs, “Introduction,” in *Care Ethics and Art*, ed. Jacqueline Millner and Gretchen Coombs (Routledge, 2022), 1.

⁴⁵⁵ Hi‘ilei Julia Kawehipuaakahaopulani Hobart and Tamara Kneese, “Radical Care: Survival Strategies for Uncertain Times,” *Social Text* 142, 38, no. 1 (2020): 2.

⁴⁵⁶ Tian Zhang, *A Manifesto for Radical Care of How to be a Human in the Arts* (Lumbung Press, 2022).

⁴⁵⁷ Hobart and Kneese, “Radical Care,” 2.

⁴⁵⁸ Millner and Coombs, “Introduction,” 1.

not distributed equally, is inextricably linked with power, and is “instrumentalized as reward and denied as punishment or erasure,” arising from histories of oppression.⁴⁵⁹ Thus, on a surface level, it can feel good to care and be cared for, however underlying systems of power and oppression complicate the idea of care. Therefore, it is critical to understand and consider the concept of radical care as an action-based approach involving labor, affect, and politics in order to fully appreciate how care functions and to reappropriate this “toxic terrain [and] field of domination, making it again capable of nurturing” and transforming.⁴⁶⁰ Care inherently and morally demands labor and maintenance. These actions have the potential to become part of social and political movements. Care is survival, a mobilization of sorts that allows individuals to envision what Hobart and Kneese as well as Elizabeth Povinelli describe as “otherwise.”⁴⁶¹ Its effects are “equitable, tangible, and sustainable improvements.”⁴⁶² Care is a “critically disruptive doing that can open to reconfigurations engaged with troubled presents.”⁴⁶³ It is also affective, feeling with rather than feeling for others, the “connective tissue between inner self and outer world.”⁴⁶⁴ Through affect and action, a politics of care emerges, a set of vital but underappreciated strategies for enduring precarious worlds with the potential to disrupt and unhinge the status quo.

Because radical care, like an ecosystem, is a relational flow of discourses and practices among human, more-than-humans, and environments, it is evident that it is at play in my work. Natural materials from animals and plants comfort drawn human and more-than-human drawn bodies. No forms are alone; there is a circulation of affect and being-with. This does not mean that such care makes everything better or magically fixes the problem as commodification. As mentioned, care itself is inherently linked to power structures and inequality and not everyone or everything will equitably give and receive care. However, there is a labor of love and tangible improvement in physically connecting plant, human, and animal through both materiality and content.

⁴⁵⁹ Zhang, *Manifesto for Radical Care*, 2.

⁴⁶⁰ Bellacasa, *Matters of Care*, 11.

⁴⁶¹ Hobart and Kneese, “Radical Care,” 3.

⁴⁶² Zhang, *Manifesto for Radical Care*, 4.

⁴⁶³ Bellacasa, *Matters of Care*, 12.

⁴⁶⁴ Hobart and Kneese, “Radical Care,” 2.

Conclusion

There is no way to deny or escape the fragile coordinations, symbiotic liaisons, category-crossing beings, and chimeric entanglements that bind together human and more-than-human. However, there is also a uniquely human desire and ability to embrace amnesia, limiting “us from understanding our current and past impacts on the species and ecosystems around us.”⁴⁶⁵ Such amnesia perpetuates commodification of both human and more-than-human bodies. It also functions to protect our minds from the overwhelming horror and repulsiveness of our modern era. This is what must be overcome, bit by bit, to find healing. Elaine Gan and Anna Tsing et al. argue that “slowing down to listen to the world - empirically and imaginatively at the same time - seems our only hope in a moment of crisis and urgency.”⁴⁶⁶

And while this sanguine, butterfly-kiss laden sentiment is beautiful, it provides little in the way of concrete actions in which this can be achieved. This is likely because in all actuality, there is little hope that humans can reverse the large-scale damage we have done to our planet. Even NASA, an organization run under the watchful eye of the 47th president of the United States, recognizes this.⁴⁶⁷ Human activity, including GHG emissions, would have to completely halt and, even then, it would take thousands of years for the Earth to heal.⁴⁶⁸ This does not mean that we should stop trying to enact change, but it does mean that individuals like myself must be pragmatic and focus on adaptability and small-scale adjustments. We must prioritize the humans and more-than-humans living right now.

As a single human, the way I do this is through my research and making practice. These activities represent viable options for caring for myself, the Earth, and its more-than-human inhabitants. We are survivors, those who have endured commodification and continue to persist. I document our experiences on this planet in my research and work, achieved with materials that embody notions of collaborative

⁴⁶⁵ Ingrid Parker, “Monsters,” in *Arts of Living on a Damaged Planet*, ed. Anna Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt (University of Minnesota Press, 2017), 161.

⁴⁶⁶ Gan and Tsing et al., “Introduction,” M8.

⁴⁶⁷ “The Effects of Climate Change,” NASA, last modified 2025, <https://science.nasa.gov/climate-change/effects/>.

⁴⁶⁸ Katharina Albrich et al., “Climate Change Causes Critical Transitions and Irreversible Alterations of Mountain Forests,” *Global Change Biology* 26, no. 7 (2020): 4013-4027; Soong-Ki Kim et al., “Widespread Irreversible Changes in Surface Temperature and Precipitation in Response to CO₂ Forcing,” *Nature Climate Change* 12 (2022): 834-840; Susan Solomon et al., “Irreversible Climate Change Due to Carbon Dioxide Emissions,” *Environmental Sciences* 106, no. 6 (2009): 1704-1709.

making-with, building new worlds, and finding connections. I observe the parallel ways in which our bodies and minds respond and attempt to better understand these symptoms, searching for paths of care for self and more-than-self. As a single entity, I am concerned with the minute, the intimate, and diminutive. This work is not a grand proposal for saving the world and its inhabitants, but my infinitesimal contribution to living and dying well with others.

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