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Editors' Notes and Introduction to *The Digital Environmental Humanities: Towards Theory and Praxis*

Issue Editor's Note

Many thanks to our Guest Editors of this Special Block on the Environment using the various techniques of the Digital Environmental Humanities: Dr. Nikoleta Zampaki and Professor Peggy Karpouzou of the Faculty of Philology, School of Philosophy, National and Kapodistrian University of Athens, Greece. They brought together scholars from Canada, Hungary, India, Italy, Japan, Spain, and the United States, creating a wide spectrum of critical thought while demonstrating some of the tools of Digital Environmental Humanities.

In addition to the special block, we're also very pleased with the selection of essays below that includes one on the now mostly neglected science-fiction writer, Clifford D. Simak, as a very early environmentalist. In "Oddly Radical: Environmental Virtue Ethics in Simak's *Way Station*," Jeffrey M. Baus argues that at the time of the essay "Simak's advocacy for ecological values and pastoral themes was a deviation from the perceived trajectory of technological 'progress' within the genre, and deeper analysis reveals that his seemingly counterrevolutionary approach, moving beyond the reductive 'conservative' label, presaged the core tenets of twenty-first-century environmental ethics and ecofeminism." In "Poisoned Grounds: Toxic Discourse in Barbara Kingsolver's Fiction and Nonfiction," Abhra Paul and Vidya Sarveswaran draw on Lawrence Buell's useful phrase, "toxic discourse" to discuss Kingsolver's ecological criticism written over about fifteen years. Their conclusion will come as no surprise that "Kingsolver's fiction and nonfiction present how human-induced chemical toxicity destroys the planetary ecosystem" while their insightful analysis invites readers to reread Kingsolver's books.

Changing the subject from ecocritism to poetic form, Enikő Bollobás in "Self and Form: The Radicalization of American Poetry from Emily Dickinson to Charles Bernstein" treats the reader to a clear exposition of "[t]he radicalization of American poetry [that] culminates in language writing, which places the creative process under the control of language, thereby doing away with the self that formerly gave cohesion to the text." She illustrates her argument with a marvelous variety of texts from the humorous to the puzzling leaving readers well equipped as they encounter a wide range of American poetry.

György Kiss in the final essay in this issue, "Once Upon a Blind Girl: Disability and Fairy Tale in Charles Dickens's *The Cricket on the Hearth*," posits "a gradual shift in Dickens's understanding of disability and bodily difference in his literary career." In addition, he argues that this fairy tale-novella raises "questions and conclusions about women's roles inside and outside the home." Thus Dickens "join[s] a larger debate about female agency in the Victorian era" as well as reflecting its varying attitudes towards disability.

The issue draws to a close with several outstanding reviews. The first by James Little, University of Cyprus concludes that Erika Mihálycsa in *A wretchedness to defend": Reading Beckett's Letters* "mark[s] the ways in which the letters recast our understanding of Beckett's texts and their place in the vaster, infinite conversation also called literature." Zoltán Abádi-Nagy notes that Maureen E. Ruprecht Fadem's discussion of Toni Morrison's heartbreaking novel, *Beloved*, focuses on her presentation of things. Mária Kurdi analizes Richard Rankin Russell's much expanded and greatly revised second edition of *Modernity, Community, and Place in Brian Friel's Drama*, while Gabriela Vöő comments perceptively on a stimulating collection of essays on *Diversity in Narration and Writing: The Novel*, where literary narratives engage in a productive colloquy across geographical and cultural boundaries.

I will end with reiterated thanks to our Greek colleagues Nikoleta Zampaki and Peggy Karpouzou for their stimulating collection of essays on Digital Environmental Humanities and add to it my great thanks to all our scholar-colleagues who carefully reviewed essays and my fellow editors who made the completion of this issue possible.

Donald E. Morse
Editor-in-Chief of *HJEAS*

Introduction to the thematic block *The Digital Environmental Humanities: Towards Theory and Praxis*

Nikoleta Zampaki and Peggy Karpouzou

The exponential growth of digital technologies has permeated every aspect of our life (Ellul; Feenberg; Boczkowski and Mitchelstein) as we live and work in various digital environments: virtual networks, social media groups, e-classes, and so forth. These environments have been characterized as *social spaces* (Lindberg and Roine) as various users are working individually and simultaneously in larger communities of users on the web. The Big Data, described in terms of large data warehouses (Taffel), are organized collections of a great amount of data on the web (Green et al.), inaugurating a turn in the twenty-first century into the so-called "Digital Anthropocene" (McLean; von Essen et al.; Creutzig et al.; Majaca). The "Digital Anthropocene" describes the digitization of our daily life, emphasizing the inseparability of our culture and digital technologies (McLean 160). Some examples worth noting are the role of digital technologies in STEAM, which explores the intricate relationship between Science, Technology, Engineering, Arts, and Mathematics, and studies how digital technologies are applied to them (Carver and Atkins; Cisneros et al.; Turnbull et al.), the role of digital technologies in healthcare (Olla et al.), education (Robin; Hirsch), media (Leszczynski; Vince and Earnshaw), business and politics (Arts et al.), economy (Márton), urban and citizen science, including the planning and adoption of digital sustainable policies (Turnbull et al.) and ICTs in the smart cities (Gabrys 2014; 2016; Farhaoui and Moussaid; Moss et al.; Stančić).

All of these working areas offer many examples that prove the critical role of digital technologies in our welfare and culture. It seems thus necessary to ponder the presence and impact of digital technologies on environmental issues and how digital technologies might respond to our current ecological crisis (McLean 170). The latter issue has not yet been fully explored as the interplay between the digital and natural world is much more complex than their binary opposition: the digital world is displayed virtually through digits, algorithms, and codes, while the natural world includes various physical life-forms and eco-systems. The discussion about digital and ecological inquiries is open in Humanities research and involves two of the fields most directly related to the topic: Digital Humanities and Environmental Humanities.

Digital Humanities is still "a diverse and emerging field that encompasses the practice of humanities research in and through information technology, and the exploration of how the humanities may evolve through their engagement with technology, media, and computational methods."[1] As we move from the "first wave," which studied the qualitative data in Computer Science to the "second wave," which was more applied (Presner), a "third wave" refers to interdisciplinary approaches; how Digital Humanities sorts through new definitions and patterns of practice, and the position of the terrain within "dynamic cross-fertilizations that are fostering new relationships" with various research fields (Thompson Klein 2015). The nature of interdisciplinary approaches is to provide scholars with practical tools with which to live in our current complex world and understand our relationship with the *Other*, articulated in terms of plant, animal, digital, and so forth. Like the Digital Humanities' waves, the "third wave of ecocriticism" (Slovic 4) explores "new" interdisciplinary research involving Digital Humanities and Environmental Humanities.

A major issue is posed by the Digital Humanities and Environmental Humanities intersections (Cohen and LeMenager 340) due to the different approaches (Posthumus and Sinclair 370) and the various kinds of digital environmental patterns, practices and tools that are studied and applied in literary, cultural, or artistic texts. Although it seems challenging to collocate the two fields as they provide constantly "emerging methods and genres" (Burdick et al.), both Digital Humanities and Environmental Humanities are open to interdisciplinary theoretical and applied research.

A common vocabulary and terms such as *environment*, *system*, and *network* are found in both disciplines, keeping, of course, their different meanings within their respective contexts. For example, a natural environment consists of various life-forms while the digital one is a series of websites, cloud servers, applications, and so forth. The latter is a "place" enabled by technology and digital services, often transmitted over the Internet or other digital means. The knowledge of various systems, their complexities, and their effectiveness in other systems raise questions such as: What are the implications between the digital and physical environments, systems, and networks? How about a "new" environment, system, or network coordinating both? How far do we need to extend our research in both disciplines? How about the potential restrictions to fusing knowledge? Despite the different methodologies and approaches of Digital Humanities

and Environmental Humanities, it is evident that similar interests and common goals exist to overcome their differences through a metaphorical conceptualization of terms. *Digital* and *ecological* inquiries are "interdisciplinary and collaborative" where "new tools, new metaphors, provide second-order feedback loops that inform the original metaphors of nature and ecology" (Morey 119). For instance, the ecological and digital entanglements (Taffel) can be conceived in terms of "metabolism." According to Amanda Starling Gould, "the idea of a digital environmental metabolism" is "an alternate way to understand the relationship between humans, technology, and the environment" as the "digital network operates as does a metabolic system," which is "implicated in the biophysical and geophysical systems with which it overlaps and intertwines" (33–34).

Chad Wellmon describes the concept of digital environment or digital ecology (77) as digital patterns and energies, addressing the "phenomena [that] are both electronic and embodied in which online and offline lives are imbricated and inseparable" (Gallagher 12). The ubiquity of the ecological requires us to examine how we create digital scholarship and how the ecological or digital are coalesced to re-conceptualize further their interplay. However, we do not abide by an instrumental or a one-dimensional reading on either the ecological or the digital, as there is a mirror-play between the two.

A definition of digital ecologies and their features are yet to be further explored due to the complex and multiple structures of both the digital and ecological. According to Raptis et al., digital ecology is *a closed set of digital and non-digital artifacts and a user acting as nodes of a network where its boundaries are specified by an activity and the structure and patterns of organization are either user and/or designer defined* (5). It is evident that the term "digital ecologies" is an open framework of digitally mediated interplays between different agencies (Taffel 2). Moreover, collaboration and cooperation are distinctive features of digital ecologies that aim at the continuous learning of them as digital patterns to explore the human, nonhuman and digital world: "[D]igital ecology is a metaphor that embraces emergence and eschews the reductive nomenclature of Taylorism. It is carefully co-designed by using tools that facilitate cooperation and collaboration. It has agility and it is continuously learning" (Betton 13). Digital ecology can also be used to denote the use of technology in the study of ecological systems and processing, examining how technological developments aid in collecting, analyzing, and managing ecological data. Examples of digital ecologies are found in various research fields, starting from geography

studies (Ash et al.; Adams), urban and citizen studies (Benson; Gabrys; Westerlaken et al.), media studies (Büscher), political studies (Nost and Goldstein), arts (Lee Coles and Pasquier), and many others. In these fields, critical conversations are provoked to understand how humans and nonhumans are digitized and for what purposes, while digitization enables fostering communities with shared eco-centric goals.

Current Environmental Humanities scholarship (Jørgensen; Posthumus and Sinclair; Cohen and LeMenager; Sinclair and Posthumus 2016; Gould Starling) involves diverse theories, debates, and practices in the so-called "Digital Environmental Humanities" (DEH), which encompasses both digital and ecological inquiry through various interdisciplinary projects, aiming to raise environmental issues. Moreover, the Digital Environmental Humanities exhibit some broad thematic strains, including archiving and databases, Anthropocene narratives, more-than-human relations, and Citizen Humanities (Ryan et al.) to "interpret, question, catalogue, address, formulate, and provide avenues and networks for practical solutions" (Travis et al. 6) to all these strains.

Interdisciplinary DEH open access glocal projects are introduced in Plant Humanities,[2] in Blue Humanities,[3] or in Anthropocene narratives.[4] The study of digital ecologies in literary and inter-medial narratives (Posthumus and Sinclair 258) offers new approaches to Literary and Cultural Studies in a more interactive way. As Finn Arne Jørgensen notes, the "idea of nature is becoming very hard to separate from the digital tools and media we use to observe, interpret, and manage it" (109). Digital ecologies offer insights on how we search large corpora of data on the web (data mining), annotate and use digital tools in processing the texts (text mining), create our own digital storytelling with the use of applications and repositories (Lambert and Hessler).

All these examples of Digital Environmental Humanities propel a "digital decolonization" of the current environmental knowledge and open new avenues to re-think the relationship between various digital and eco-narratives, exploring also the kind of entanglements of the human, nonhuman and digital world (Verma). For instance, the development of digital practices for monitoring animal life's movements in nature highlights the role of digital technology in tracking wildlife behavior and threats, giving "a voice to the entities they monitor: to animals, plants, people, and inanimate objects" (Gabrys). The study of these entanglements could develop new forms of subjectivity, agency, and citizenship that prove that

"human beings are not the only essential actors" (Karpouzou and Zampaki 34).

The contributions of this special issue turn the environmental gaze onto digital environments by bringing together various epistemological terrains, including Literary and Cultural Studies, Archive Studies, Continental Philosophy, Game Studies, and Arts. Moreover, the authors explore how the human, nonhuman, and digital worlds are represented and forge relationships in various environments, addressing the complexities and creativity in the interacting process of all agencies.

Erik Zepka explores various epistemic zeitgeists about the "real" and the "ecological" through past and modern archival technologies, drawing examples from different periods and cultural traditions. Zepka focuses on the merit of digital archival development, which links more and more disparate spaces and times, providing a better understanding of the cross-cultural paradigms of the *oikos*.

Turning to the study of digital machines and materialities, Joshua Nieubuurt, through briefly tracing the complex intermingling of advanced digital machines in the realms of cardiovascular health, sexual desire, companionship, and creativity, explores a philosophical understanding of the social and pragmatic roles advanced digital machines play as co-agents within our combined ecologies of existence.

Heather Rogers and Claudia Berger analyze the use of digital technologies in various Plant Humanities digital projects, underscoring the importance of portraying plants as subjects of inquiry and not only as background objects of mere representation.

Moving to more applied approaches, Dez Miller examines the transformations of water culture in English literature diachronically through an analysis of word embeddings in the Novel TM corpus, housed within the HathiTrust Digital Library in the US. Miller's approach is both analytical and applied, adopting a distant reading in finding references to rivers and tracking changes in the semantic fields around rivers over time.

Working on digital archives, James Harry Morris's research about measles epidemics offers a digital analysis of data garnered from registers of yearly religious membership censuses taken on Japanese society during the Edo period (1600–1868) with the use of a digital application called *DANJURO ver. 7.0*. The extracted data prove that measles epidemic outbreaks of that period are not as significant as those of other diseases in terms of mortality, proving that *DANJURO ver. 7.0* can help us to humanize Big Data.

Olga Zaslavkaya and Vera Kuklina's *Arctic InfraScapes* is a digital Indigenous eco-artistic project of natural settings and materialities, indicating that the human–technology–nature relationship is a conduit for creating a new sense of aesthetic experience in digital environmental art.

This special issue makes various Environmental Humanities voices enter into conversation with digital scholarship, aiming to explore current perspectives to bridge the gap between nature and technology. The contributions aim to underscore how the digital and the ecological are deeply implicated in the design and production of various narratives, addressing mainly how the ecological mobilizes the digital and vice versa to create individual and collective digital ecologies. On the one hand, our special issue's interdisciplinary approach raises questions about the role of the digital world in what we have traditionally identified as ecological. On the other hand, there is a need to frame new digital environmental theories and practices within other disciplines and study the interplay between the digital and ecological.

In conclusion, the discussion about the intersections between Digital Humanities and Environmental Humanities as well as the framing of the context and the content of Digital Environmental Humanities are open and yet to be discovered to provide an approach that is supported by new ways of understanding and taking care of various life-forms through digital environments.

Last but not least, we want to warmly thank *HJEAS*'s Editor in Chief, Professor Donald Morse, and the whole Editorial Board, our special issue's contributors, and peer reviewers for exploring a "collective digital ecology" with us.

National and Kapodistrian University of Athens

Nikoleta Zampaki is Postdoctoral Researcher at the Faculty of Philology, National and Kapodistrian University of Athens, Greece.

Peggy Karpouzou is Associate Professor of Theory of Literature at the Faculty of Philology, National and Kapodistrian University of Athens, Greece.

Notes

1 *Digital Humanities Quarterly*. Web. 10 June 2024.

2 *Plant Humanities Lab* supported by Dumbarton Oaks in the US; *Herbaria 3.0 Digital Ecologies: The Use of Digital Tool Juncture in Modern Greek Poetry (19th–20th c.)* [in Greek]

3 The *Blue Humanities Archive*; the project *Sea in Literature* [in Greek]; the monograph titled *The Deep Maps: Blue Humanities* written in the digital tool Juncture.

4 See, for instance, the *Climate Change Digital Archive*, supported by the Royal College of Physicians of Edinburgh in the UK; the *Digital Environmental Humanities* website.

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Scientific Models, Paradigms and Systems of Ecology: From Symbol Apparatuses to the Real

Erik Zepka

ABSTRACT

An evolutionary framework of epistemology is presented where different paradigms offer different shadings of the ecological real. It is argued that better approximations will look cross-culturally and cross-temporally in order to increase the amount of scientifically fallible testing perspectives. General concepts are sought out, translating, for instance, a Homeric shield to a general human need for protection, and Mesopotamian agriculture to a need for sustenance. Once concepts are generalized, their recurrence becomes the best estimation of a human reality (protection, food) where the initial local abstractions (shield, agriculture) are more partial. Such inter-paradigmatic ideas are claimed to comprise a more sustainable view of science and interdisciplinary knowledge. (EZ)

KEYWORDS: ecology, realism, evolution, science, technology

Scientific models exemplify the toolsets we use to explore the world. In a rational sense, we can say that they provide a map for the current paradigm of knowledge apparatuses—whatever technology is available, and how it might be reflective of a greater context, how its logic is microcosmic for external questions. We need only survey current available devices, the constructed and known, to see what analogies and lab aids we have at hand to explore a given topic. Our labs, our workshops, our studies, our theatres—our yards, our kitchens, our playgrounds and jam spaces—any place we consider amenable to thought, a scene of toys that mirror something else: spurs and crutches for grounding and building theories.

The ecological maps the logic of *oikos*—the home we have made out of the environment, what portions we understood, what we were able to repurpose. Thus, like technology, it is a built space, albeit in a domestic mode, except it contains a pointer to the real. A logic of the home where that aforementioned thought space lives is possibly the most general one—the one with some minimal human presence, where survival's epistemic root enjoys a space of learning, growing, and discovering. This laboratory of

laboratories is finally always contingent on its adequacy in the greater environment, its existence depending on the successful understanding of a place over time and how it may or may not be able to feed and shelter a given community.

Our models and our homes evolve. Concurrent with biological evolution, a technological species at any moment can similarly grow and alter their gadgets and constructions over time. This restless ambience, dwelling multiplicity, never at home but always potentially in one, may be a characterizing feature of human niche carving. Extensive modification, a mutating aid set for thriving in any climate, is an operation of ordering that leads eventually to a point where the creations are transgenerational and their symbols mutually understood. Space and time shrink into a collective picture: while life cycle technology is fragmented into diversity, this archival technology consolidates into unity. Here we have two basic technical movements: the constructive, which renews with subsequent generations novel empirical knowledge and creativity; and the other, which simplifies and rationally unifies diverse systems into more encompassing wholes. One creates paradigms; the other defends and affirms them.

What is a paradigm? For Thomas S. Kuhn it is a defining foundation for a community, a thematic unifier, an idea that brings people together at the exclusion of other ideas (23). The most extreme version of this may be a complete societal displacement, the conquest or substitution of a people with a resulting new cultural context. But we can also think about subcultures, about revolutions, or as Kuhn does, prevailing cultural modes within a continuous social context, which we will revisit after further exploration. Michel Foucault uses the term "épistémè" to refer to an a priori condition, a kind of social rationalism that prefigures truth and is specific to an epoch (60). Once again, we can return to the paradigmatic idea for the similar definitional problem of the epoch and think about how such rationalism can arise. It is a collective expression of human and environmental bias, something embodied or innate that makes up our basic material presence, but one that is not manifest without culture.

Aristotle's *Posterior Analytics* offers us one such manifestation—the root word for Foucault's socially grounding knowledge is freed up into a theoretical space, and there Aristotle broaches how and what episteme conditions (Aristotle 39). It is a necessary one conceived in a geometric sense, much as axioms, assumptions, and definitions condition a formal theorem. The determinism of a mathematical system, given its acceptance, gives us a descriptive manner to conceive just what a rational a priori can

look like—it itself does not have to be rational, just communally committed to; rational truths can then be arrived at through it. Returning to our technological paradigm, assuming the apparatuses and formal starting points a given age has, we then map an ecological reality specific to that period. And for a more general ecology? We will need to accumulate different modes of seeing the world to begin approximating what a realist picture would grow into. Conversely, we can say we will continually compare constructive, renewing ideas with different social ideas that have calcified into paradigmatic dogma. Paradigmatic knowledge will inevitably confuse the socially legitimate and religiously observed with the recurrence of the real, the consensual data of the world. The bases of cultural authority bias, the incontestable blind spots needed to maintain the system, will look the same as general truths that have survived the trials of contestation. According to Aristotle, the truths of one axiomatic system may not hold in others, but if you do not shift the axioms, you will equate what holds true in the system with systemic bias. To avoid these pitfalls, we need inter-paradigmatic knowledge, concepts that work cross-epistemically to achieve Karl Popper's working ideal of conjectures that can be refuted we will want to maximize the perspectives from which we frame and test (312). Further, looking through Charles Peirce's fallibilist pragmaticism, our logical structures should be available to fail in as many ways as possible (293). Knowledge between epistemes takes the cultural and temporal possibility space as grounds—the greater the empirical exploration across space and time, the more robust the rational potential.

To meet an essay-length exploration, a sampler will follow investigating an array of epistemic zeitgeists. As unifying technology's calcification of constructive views is of interest, they will follow from archival beginnings, roughly the Bronze Age onwards, which will include the grand constructive picture, arguably the great majority of human technology, as constant contesting critical contrast. This archival period gives us a unique view into the problematic for it is exactly this accumulating, communicative technology that is accelerating into ecological questions and crises. The approach will be an empirical, impressionistic exploration, to match more rational formalizations elsewhere. The problem is what is the real and the ecological granted different paradigmatic models and systems; how do they each arrive from their given toys and tools, cultural ideas and stories, to provoke a picture of the world? We are looking for recurrent concepts of the real, what the world is and what we are in it, and this will then be our tentative thinking apparatus. We will find

conceptual clusters of this reality in scientific ideas generated around agriculture, geometrical squares, transit and mobility, security and shields, and the light and heat of the sun.

Unlike their Platonic followers, Mesopotamian dialogues are at once discursive and environmental, planetary and personal—the problems that abstraction brings out heighten a civic, moral idea at the expense of a primarily ecological one. This undergirds the real and our chosen dialogic argument, that is, we must account for dialogue in general as well as in a particular social setting. The moral would splinter into the natural, psychological, descriptive, and environmental in the Mesopotamian mode, and what questions we had must be translated through that apparatus. What is settled is a partial truth that also speaks to the cognitive gadgets that were lacking previously; thus, the Greek *polis,* for what it is worth, is not included in the Mesopotamian reckoning, just as Greek political focusing loses aspects of the natural counterpart the Mesopotamian approach affords. But where they may find common concepts, at least in the Athenians' Iron Age precursors, is in the crop field. Hesiod's *Works and Days* is committed to this cause, and Mesopotamians invented the seed drill. And what about Mesopotamian dialogues? One example is the "Debate between Winter and Summer." Imagine the cosmic and layered view necessary to conceive of such interlocutors: this could be an example where subsequent overabundance of toys leads to an imaginative paucity we cannot equal again. First, for such speakers to be agents at all, they must have some discretion, that is, there must be summer and not-summer, a period labeled in line with the terrestrial-solar position, which then links to things like how to eat and other annual activities. A deeply cosmic event is personal on a survival level, an equation that we will find in archival technology lost as states develop. That personal element extends to apologies and opinions and entire personae—we might in certain modes be able to accord a non-human animal, maybe a childhood toy, certain fictional agencies while understanding the conceit, but a season would just seem a bit abstractly bizarre—we sacrifice the abstractions of astronomy for abstractions of archival toys, a common progressive pattern.

But why animate a personal relationship with seasons? A possibility is their meaningfulness in the face of food, fertility and agriculture. Winter wins the debate against his brother Summer. Enlil, their dad, says "Winter is controller of the life-giving waters of all the lands—the farmer of the gods produces everything. Summer, my son, how can you compare yourself to your brother Winter?" (304–09). The Platonic truth arrived at in this

dialogue is water—a logical result is equated with a survival necessity, something that would seem either naive or bizarre in Plato's universe of moral and formal truths. In turn, Plato's truths might seem meaninglessly abstract compared to some Mesopotamian truths—they lose a survival element and gain a moral generality, paradigms trading off their cognitive crutches. Another perspective that may differ from the Mesopotamian one is a society not so locally rooted and more nomadic in nature. Lacking Plato's urban abundance, a nomad can always move where the food is. Going back further from Hesiod were his Bronze Age ancestors who, like the Vedic Baudhayana, were mobile fighters whose hearth and home had to be rebuilt from place to place (Plofker 385). Security becomes tantamount, which for Baudhayana results in a kind of blueprint for translatable soft architecture. Conversely, we might think of a figure like Achilles, whose prize possession is clearly for Homer the shield he gets built for him. Intensely described in every possible detail in a manner perhaps a bit boring or confusing for a contemporary, the deep importance of security, of giving life to what protects you, of deeply valuing what keeps you alive, is a general truth rarely encountered in civilizational settings. The Mesopotamians are more worried about a good crop yield than getting stabbed in their village, just as Socrates is more concerned with moral and legal values than getting attacked, although perhaps it was just this sort of blind spot which got him in the end.

Achilles' truth is maximum protection, traded off for Mesopotamian food abundance, and again for Platonic moral rectitude. And what of Baudhayana? Here it is a ritual space, for communal activity, for social events—if Achilles stays alive, is it a life worth saving? Baudhayana's real truth is the social life, meaningful activities and connection between people and their world. We have water, food, protection. Once Socrates has that social connection at each banquet, the moral challenge might arise. Different ecologies, built spaces lead to different realizations of the real. Each paradigm can stop to notice the other perspectives, but in their immediate world it is also clear what problems and realities recur, what *oikos* and home they have and how to make that sustainable. The need for water does not go away in classical Greece; Achilles will still need to reckon with the need for community as long as he survives, but for now it is the shield he needs. A human planetary problem is one that includes all the sub- and super-problems: water, morality, protection, and society are part of its full picture.

How does Baudhayana build his altars? With mathematics. His Shulba Sutras are treasure troves of mathematical ideas, particularly in regards to the square, which happens to be the basic altar shape. Warp to Han China and for Zhang Heng it is magic squares that are of interest (Needham 371–75). But what kind of reality is a geometric shape? What kind of truth, what kind of ecology? We might return again to Plato, not only to find some justification, but also to find that while abstraction loses touch with the basics of water and protection, it multiplies its uses once engaged with. Geometry is a kind of philosophical-logical perfection for Plato, something that quietly informs the maieutic searches of his dialogues, and is a kind of innate model for anamnestic learning. For Baudhayana it is the proper temple form. For Zhang, it is a convenient and elegant format for symmetries, puzzles, and a host of mathematical information. Plato's commitment may seem arbitrary, Baudhayana's is just one of many others, and in Zhang's case, it might simply not be apparent what is of value without inserting oneself into those puzzles and questions.

Omar Khayyam complicates the problem. He deals with cubes, solves their volumes, works with and uses them—if the real use that Zhang engages was mysterious, here it is literally exponentially so (Kasir 52). Except that here, through a constructive mathematical move, this apparently useful square has become something that at least has the dimensionality of the world. We cannot find many of these cubes in the world, but we can easily imagine one built, we can build it, and we suddenly have a tangible relation we previously lacked. We can stack it into walls, we can build some alternate version of Baudhayana's altar, we can maybe start to get some tactile sense of why this shape might be humanly convenient for our *oikos*. Khayyam adds tactility, but also complication.

Fast forward to Henri Becquerel and Joseph Nicéphore Niepce, and we start seeing these squares being built and used. To communicate. With what or who? None other than the sun of our Mesopotamian Summer. Niepce's heliograph is an early form of photography, recording sunlight's mapping patterns onto a square. Becquerel's square solar cell turns that same light information into electricity instead of a visual image. The abstract square has now been subsumed into a creation pattern that in turn informs new levels of abstraction. What is being discovered and done gets more convoluted, loses basic properties, but gains new levels of precision. This is not the Mesopotamian sun which is rated worse than water by Enlil in the desertified land he inhabits. Now the sun is subsumed into a utilitarian frame, like the square, and parsed into a subsidiary process that

either maps out the appearance of physical space, or, conversely, has certain translatable energy that can in turn power electrical products. Much like Zhang's square, living with similar technologies makes apparent their real value in our ecology, but for those outside of the paradigm the abstract layers mount and the value, the truth, the reality of their need becomes more complex. Just as the value of a magic square may be sufficiently outside of our paradigm, or our own subcultural paradigm, to see what it is worth.

Evolving from paradigm to paradigm, we see both how different perspectives highlight and obscure different qualities, and also how archival technologies are inherited and complexified, ultimately accelerating combinatorially in an exponential manner. Additionally, we see some recurrence in this short space–time network, one whose linked hubs can be described as agricultural, geometrical, transitory, secure, and solar. This empirical scattering complicates a local approach that looks at ecology and scientific truth and realism from our particular perspective only, but a complication that broadens the base for re-rationalizations. It reassesses axiomatics, enters an exploratory mode to potentially shift and question them, and welcomes the rebuilding into a new Peircean logical structure open to further fallibilist application and testing. Broader empirical probing reveals deeper rational forms in a search for what is sustainable in knowledge, what is recurrently mapped, and how our evolving laboratory toys and extensions can aid that search.

We have painted two pictures. The first is of evolving archival technology that builds on its past like a deathless population and serves as a mutating knowledge apparatus that highlights and obscures the best scientific ideas we can afford. The second is of the more common technological process, which oscillates around anthropic extensive problems and ideas having common ecological and survival concerns. What happens when this realism is combined with the archive, whose memories and fictions can bring it to new religious heights? We shall look at our shield, security or protection, as an example case for the question.

Protection is a general human technological idea; however, to see it we must look across paradigms. Achilles gives us its brute necessity, yet the privilege (agricultural development, moral discussion) afforded when it is not scarce is something we learn from other paradigms. A scientific truth is a recurrent constant that is basic to existence and a pillar for further ideas. It is the generalization of law which, when sought through different epistemes, separates religious law from general physical patterns. The

success of social being and effective food planning is built on consistent security. Later, inheriting paradigms will lose investigative interest in constant concepts, will consider them part of the religious legal architecture and merely a backdrop for more abstract and "pure" ideas. So a Platonist will view Homeric military pragmatism and inspirationally aping heroic motions will not get at any important behavioral ideas. Likewise, a Mesopotamian may need to assume the safety of their crops, but their science will focus on the plant's life cycle, its pests, maximizing food yield, and so on. However, if security fails, they will either have to cultivate that knowledge to restore it, or the very basis of their super-science—and any hope of practicing it—will vanish. To get to the most contemporary problems of archival technology, success will depend on how well approaches are rooted in past problems that made the current ones possible.

Whereas general technology has a collection or non-directed network of common concerns, archival technology variously veils or overemphasizes those concerns while accumulating a host of more abstract ones on top. We are now equipped to look at our recurrent ideas and decide if they are indeed general, or if they simply happened to be cross-paradigmatic enough to be included in some or all of our analyzed paradigms. We can start with an apparent counterexample, agriculture, for while agriculture is certainly depended on from Mesopotamia through Greece, India, China and the Muslim world, it is not always needed. Indeed, mobility is an interesting alternative strategy apparent in any Iron Age nomadic culture. Of course, the core idea is sustenance, and any prehistoric group in, say, an abundant equatorial environment could do without both mobility and agriculture. Thus, these are what we could call post-archival, more abstract means to achieve more basic ends, eventually coming to construe a hierarchy of these. Contra Abraham Maslow, we do not call them needs (450), for the needs and basic required knowledge have not changed, but rather more abstract tools to match a technological level, problems we have in a very precise sense invented (which in turn means that socially, these do paradoxically become effectively needed).

So much for agriculture and mobility, what of the effects of the sun and the shields of security? The sun is likely one of the clearer examples of a concept with derivatives (light, heat) general for any earth life form. The shield, on the other hand, is a little more nuanced. We transformed this question earlier into one of protection and safety, which, while a common concern for a home, family and altricial development, can be achieved

through a wide array of means: fortifications, camouflage, strategy, or weapons and armor like the shield. Particular to the proto-Iron Age battle, Homer describes this arch accessory, which, for instance, today would be a joke in terms of actual security. The square is perhaps the most difficult, though we have all the tools for the problem. While the moon, the sun, the sky dome horizon, and such make some prehistoric cases for circles, the square is a harder sell. Clearly with the agricultural lots surveyed, with inscriptional planning interfaces, we have examples in addition to such phenomena as crystal structures; still, it seems we have again reiterated forms of food and labor accumulation, of scaled modes of communication, that will then translate into the more general issues of sustenance and dwelling. Yet a square is not agriculture. Thus, geometry takes us into the most common space of archival technologies, where a relatively clear hierarchical reduction is not possible, and abstract problems can translate to inevitable ones in multiple ways.

With this we can frame more received ideas of scientific constancy. Newtonian momentum conservation, which, via Emmy Noether, is translational symmetry, is a recurrent factor usefully taken as an axiomatic assumption in calculating force diagrams. Like the square, however, which of the many things the abstract diagram can refer to (and why it matters), is indeterminate. The power, we could say, of the square is its lack of ties to one recurrent problem, which allows a conceptual parsimony in addressing multiple issues with one idea. Archival technology proceeds by inheriting and black-boxing past concepts—the square and many other concepts must be assumed before a free body diagram becomes possible. That this inheritance has no limits is the great boon of such symbolic technology—their physical translations pose the great problem. We can translate this into a contemporary ecological data problem, such as the Mauna Loa rise in CO_2 (Keeling et al. 538–51). Our abstract model becomes a bio-spheric approximation, and like the shield, we argue, the abstract chain of effects will result in human inhabitability. The act of protection will be achieved by optimizing both the description and reversal techniques of our square shield. Where the agriculturalist might appreciate the mathematical tool of planetary and celestial prediction as an aid to getting fed, the homemaker might benefit from an environmental model that helps to build an environment suitable for humans.

Scientific truth then is built on recurrent roots (the sun, protection, sustenance) that expand into more abstract problems. A paradigm always considers the interesting and immediate abstract problem as more relevant

and scientific. Plato is not investigating morals to recover understanding of Achilles' wrath; indeed, it is seen as something to overcome to arrive at the more cultivated idea he proposes. Yet an inter-paradigmatic understanding will see understanding such a "battle-emotion" as the necessary logical root to arrive at a more general privileged idea of emotional containment through rational means. In the same way, Achilles the front-line warrior has a shield and his wits as his methods of protection, whereas dialoguing Athenians have the city-state apparatus taking care of this for them. They have not done away with armor; it has been abstracted to a city level, to a mercenary level, to a level that conceptually has it black-boxed so a meta-problem can be addressed. In one direction it may seem that science is improving as it is building up abstract layers, yet, simultaneously, it is fragmenting basic problems into abstract categories, complexifying problems while increasing the toolsets to describe them. The scientific process works to maximize fallible investigation within a paradigm to ultimately arrive at the inter-paradigmatic grander consensus of addressing general issues.

Debates again: examples, winter and summer. An object we have not analyzed deeper is water. Can we put it in the generality of the sun? What sort of idea or problem is water? As in Roman Polanski's *Chinatown*, the whole fuss (in Enlil's eyes) turns out to pivot around water. What is the core issue at stake here; what will make this problem a non-problem; what is the essence of the debate? It is water. Our conceptual reduction is also a material description, our best knowledge takes us to an embodied evolved space, a contained and physical one. The most successful ideas have this material quality which a rarefied illusion would be confused by until it can empirically prove causal reasoning. Causal priority for Enlil is that with water we have good agriculture; the sun is less foundational. So both are not equally dispensable or necessary even if we ultimately need both—basic ideas recur, are compared, come out more or less critical, and so we empirically repeat. In the end we just see that some things repeat more than others, and their subtraction becomes more destructive. We might transport away from Near Eastern deserts to a polar region where water abounds and the sun's warmth and light is scarce. More tension, more debate, more examples, more discourse.

On the one hand, we have a spectrum of concepts that approximate a true real, on the other, a variation from paradigm to paradigm on what their proximate real is. Each proximate real may be more locally important but enter into a subsidiary role globally. By revisiting the Mesopotamian

case in an independent way, we can see technological patterns, the closer to a general technology, the closer to a recurrent truth. More abstraction leads to more rational sophistication and translatability with a more complex empirical method. The settled hubs of realist tendency then are found with *Occam's razor* in the greatest simplicity, from which each local node arrives from their relative paradigm. Revisiting Achilles to Plato, we have seen a shift from an us–them idea of protecting our own, to a more universal idea of abstracting emotion into a rational generality or moral goal. But the warrior's fight or flight anger, which might save his skin, is not abandoned by Plato, but is de-subjectivized and analyzed from a more objective standpoint.

The Homeric bard's inspired and poetic retelling of the Trojan war reaches a point where its knowledge is more ancestral than contemporary, yet for Socrates, it is still a cultural binder and something not to be discarded entirely. That such a removed world needs an analytical mindset is without question in order to make space for a new empirical truth. Thus, the emotions and situated geographies of the gods and heroes of their Greek ancestors are important and continual objects of dissections and some of the many nodes by which to arrive at a multi-emotional generalization. Was that objective pivot for Homer the past epics he might have read and used as a model? Perhaps Mesopotamia's *Gilgamesh* whose concern for his city, documentation and divine kingship was seen as prestigious but outmoded over a more psychologically translatable tale of passions and drama. And *Gilgamesh* for Plato is quite simply not an object of inquiry at all, a king exiled or sacrificed, now too ancestral to be of referential use, though an indubitable building block of the past. Aside from defining the limits of the current Platonic paradigm, it is these excluded tales that will become fertile seed beds for future epistemic innovation. Could it be said that Vitruvius returns to a subjective valorization of Gilgamesh's concern for civic wellbeing, except now with an inherited objective universalism that follows from Platonic literature?

Whatever the path we choose, we will find there are many paths, and that proximate truths cycle between the subject, object, and abject, all the time oscillating around realist hubs. Mesopotamia's concern for food abundance, Baudhayana's interest in adequate social architecture, even Heng's quadratic or Khayyam's cubic methodologies, none of these cycling proximate questions are completely arbitrary but need some path however complex to more general truths. That is, while cycling subjectively, objectively and abjectively, we are uncovering the inter-paradigmatic truths

that different symbolic and technological contexts reveal over space and time, the very concerns that set us off. The subjective view will maximize empiricism, the objective rationalism and the abjective the paradigmatic. The more we cycle through their different ecologies and domestic epistemes, the closer we get towards a view of the ecological real.

In the dialogue, the Mesopotamian natural concern is echoed in the Pre-Socratics, yet for Plato this is a rational backdrop for shifting to a priority of civic moral questions. Platonic realism uses this realism as a pillar and is in accord with the naturalist skepticism of social science as embodied by the sophists. Conversely, we could say that Platonism takes a human scientific pole to then reinvent previous discarded naturalisms into a new realism. What changes is a framework's emphasis on Plato as a socialist real thinker or a realist social one, and how that serves to highlight questions being asked about the paradigm and bigger inter-paradigmatic pictures it can help paint. What is part of its inherited tradition and what is a cultural discard it takes to reinvent. In our previous example, we can say that Plato continues the moral literary tradition assuming a civic context, or contributes to civic literatures adding an integral moral element.

We ask what is the best path to get to Plato's realm and from there to a more general one. One way is that we might explore all descriptive accounts and find their commonalities. In our two past trajectories we might say that Plato is a thinker of morality in the polis, and a researcher on social science with a realist perspective. We can leave that divided into two paths or we could then say, well, Plato's *Republic* is at once realist and political, and that his moral questions are social ones. This could give us two more paradigmatic paths or we can then say ultimately he is a social behavioral thinker within an ideal polis and trace that to the general real. Here we have a descriptive account of paradigm formation: we have a space and time, but then we have the symbolic archival world where we find it.

Archival development links more and more disparate spaces and times in the very simple sense of what Plato could have read and used to build from. Simultaneously it has its own accumulating development, translatable and impersonal, that complexifies human knowledge apparatuses over time. But Plato's place in that accumulation is his time and space, but also all previous Bronze and Iron Age archival texts that he has access to, and in any order as the archive flattens chronology in a simultaneous echo chamber. The paradigm then is Plato's construction and the subsequent reader's construction on a platonic text.

Returning to Kuhn after we have more thoroughly fleshed the situation out, Kuhn's own subcultural examples depend on a citational community that recurrently identifies a moment starting with, say, Einstein, much as they might with Plato. So, although a war or revolution might exemplify paradigmatic extremities, in a scientific sense, they become of interest when revived through the citational archive. For all the possible levels of paradigms, what matters is a community that associates itself as followers of Einstein or Platonists, and in turn for Plato what Eleatic, Pythagorean, or whatever ideas might be self-identified into their episteme of subjective reality (and in turn what is objectified and abjectified).

An idea that brings people together and that gains a collective importance becomes a node to the real. Bringing together more nodes reveals the preferential attachment at the hubs which then become better approximations of the real. How many nodal perspectives, how many imaginary points and vectors of vision can we reveal to get the best idea of a general structure? This is the proposal of a skeptical and descriptive methodology. Speaking in terms of rationalization, a theory is best stated in the most translatable and condensed form. Speaking empirically, it is the examples, the experimental descriptions, the thought trials and frameworks that reveal the skeptical probing picture of the affair. Without skepticism and empirical robustness, logical frameworks can become castles in the air. Argumentation and exemplification are the salves for this, and the reasoning behind an artistic-scientific approach and merging scientific and cultural problems as one empirically lacks what the other in turn affords.

One might inquire on the impossibility in predicting the ecological outcome of these accelerating contexts and their underlying apparatuses that our very tools to understand the *oikos* may be our undoing in some form. However, if there is some intuition or prior evidence to inform such forecasting, it is believed that maximizing such pictures and evidence as to the nature of accumulating archival technology could contribute. How many past paradigms with similar questions can we compare having future knowledge in those cases, and how can that begin to separate hype from science, actual events from skewed estimations? How many past paradigms have the same technological drive that we cannot quite understand?

Erik Zepka is a research scientist and biocultural theorist specializing in technology and evolution. He has presented his work globally as scientist (Tongji University, Engineers.SG, MIT, New York University, DeTao Institute), theorist (Furtherfield, V&A Museum, Transfer Gallery, Pearl Art

Museum), and researcher (Simon Fraser University, University of Victoria, ShanghaiTech University).

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The Flesh and Silicon Mesh: A New Materialist Conception of Advanced Digital Machines

Joshua Nieubuurt

ABSTRACT
Digital machines, including artificial intelligence (AI), have long been held as potential agents of social change. From their binary role in cultural productions to the real-world implementation of such, digital machines have typically been considered within the Heideggerian "readiness-to-hand" category of Being. This paper seeks to alter conceptually this dynamic through the use of new materialism and Morton's concept of the "mesh" to provide a new understanding of the social and pragmatic roles advanced digital machines play in ecologies in which they dwell and continue to emerge. Through briefly tracing the complex intermingling of advanced digital machines in the realms of cardiovascular health, sexual desire, companionship, and creativity, the intermingling of flesh and code speaks to monumental future potentialities for enhanced forms of dwelling. This paper proposes that in the near future the necessity to view advanced digital machine technologies as co-agents dwelling together will alter the established paradigm and allow for emergent ecologies. (JN)

KEYWORDS: artificial intelligence, new materialism, digital machines, digital ecologies, digital rhetoric

Introduction

Digital machines including artificial intelligence (AI), machine learning (ML), and deep learning (DL), have long been held as potential agents of social change. From the spark of mathematical insights brought forward by Ada Lovelace and Charles Babbage's "Analytical Engine" to contemporary large language models (LLMs), such as Llama 2 or ChatGPT, AI has slowly become a part of daily existence (Vinchon et al.). In a world fueled and organized by digital algorithms it is increasingly hard to conceive of a time when their usage did not pattern the world. Samuel Butler's novel *Erewhon,* specifically the chapters making up the "Book of the Machines," was the first to textually raise the potential of machines to become more than lifeless tools utilized by the sentient hands of humans. Yet, in that nascent

stage, Butler acknowledged the social limitations of the machines as mere tools for the will of humans, a statement that echoes Lovelace's notion of machines only ever being able to do what humans ask of them directly (Turing 454). Butler writes, "[machines] will still always do the one or the other for our advantage, not their own; that man will be the ruling spirit and the machine the servant; that as soon as a machine fails to discharge the service which man expects from it, it is doomed to extinction." The story of technology, "smart technology" or not, has displayed this paradigm time and time again: *things* are useful until they are replaced by better *things*.[1] In the century following Butler's work the physical machines of the Industrial Revolution gave way to the digital machines of the twenty-first. During that time digital machines continued to be reiterated by the social consciousness into cultural productions along popular binaries of "good" and "evil": a hero bringing about technocratic utopian dreams or a demon preparing a future hellscape. One need not look far into their streaming catalog of choice to find multitudes of examples of the latter. Yet, in the world outside of fiction, advanced digital machines continue to aid in improving and altering the human condition. The diverse use of AI models displays their widespread potential: from aiding humans in generating creative images from text (for example Midjourney, Stable Diffusion, or DALL-E) to DeepMind's AlphaFold releasing the "predicted structures for nearly all cataloged proteins known to science," (Kazmierczak and Leite) advanced digital machines have found niches related to nearly all areas of human life (Hassabis). In each area, and in the colloquial understandings of such technologies, digital machines are denoted a Heideggerian "readiness-to-hand" category of *Being* (Nieubuurt). Scholars have maintained this stance since the early days of AI development and were included in Alan Turing's first foray into what would later be called AI (Turing).[2] Among those closer to the current state of AI, Hubert L. Dreyfus, discussing why Heideggerian AI was doomed to fail, notes, "a neurodynamic computer model would still have to be given a detailed description of our body and motivations like ours if things were to count as significant for it so that it could learn to act intelligently in our world" (265). Dreyfus here notes that a machine's theory of mind is too *inhuman* to dwell as humans do, limiting their agential potentials. At the other end of the continuum, scholars such as Margaret Boden see digital machines as [potential] agents of change in the world dwelling alongside humans. Rather than as a tool to be subservient to the will and whims of humanity, AI has the potential to be a co-agent dwelling alongside homo sapiens. So, which is it? Are AI models wholly subservient

to homo sapiens or are they potentially the masters of their own destinies? The answer, at least currently, seems to fall somewhere between these oppositional positions: they have the potential to break the metaphorical chains of subservience, but are tethered to the human condition; an unhuman counterpart helping the world move alongside their flesh and blood progenitors. They are unhuman co-agents in a world of enmeshing bodies: those of flesh and those of silicone. Boden, noting the role of agents, writes, "As for agents, their potential uses include helping us by suggesting, identifying, and even evaluating differences between familiar ideas and novel ones" ("Agents and creativity," 117).[3] These uses should not be considered a form of dominance, but rather a form of cooperation. A negotiation between the affordances of different *things*.[4]

This paper seeks to conceptually re-align this dynamic using new materialism and Timothy Morton's "Ecological Thought" to provide a new understanding of the social role advanced digital machine technologies play in the great Ecologies from which they are emerging. This is one step toward displaying the complex intermingling of ecologies of embodied humans and the digital machines forecasting the necessity to view such technologies as co-agents dwelling together.

Digital machines

In the past, carbon was king; being the origin of all animate life, it reigned supreme. This kingdom was not usurped until the early twentieth century, when a new form of material power emerged: silicon. Edging deeper into the twenty-first century, these two kingdoms share vast amounts of territory and have formed an alliance benefiting both. Through this partnership and their gradual enmeshing, the digital machines of today were spawned. They now surround and envelope human life. They come in many forms and seep into the nooks and crannies of carbon-stack lifeforms in the twenty-first century. For example, software allowing one to compose and consume media texts (such as this one!), the expanding spread of the Internet of Things (IoT) from doorbells to smart fridges, and the increasing deployment of advanced neural networks seeking to decipher the mysteries of science, have gradually become an ambient part of existence. They exist all around us, quite often invisibly moving people and other things as the human drama continues to play out "as usual."

Ambience, as defined by Thomas Rickert, "is material and spatial . . . it is materially embedded in place not as a static description of a situational state but as a plastic, open-ended, and evolving event" (112). It is a

collection of phenomena iterating, evolving, and flowing in and around our localized phenomenological experiences. The evolving ambience of the digital machine is a nebulous becoming: the iterations and evolutions largely remain hidden from the general public due to a lack of technical understandings, apathy, technological obfuscation, or black boxed by companies holding their intellectual property close to the chest (Pasquale). Nonetheless their effect on dwelling (for humans and other life forms) allows them (when considered individually or as a holistic set of digital entities) a particularly unique form of ambience. An ambience flowing through veins of microscopic electrical rivers, into lakes of doped silicon, and then into the great oceans of digital connectivity. For humans, this ambiance is generally met through multitudes of various interfaces: TVs, smartphones, computer screens, gas pumps, and anywhere ones and zeros are transmogrified into decipherable signs and symbols. Their ubiquity obfuscates the inner workings of digital machines; pulling a veil over their operations so that their output is all that is seen.[5] Lori Emerson, in *Reading Writing Interfaces: From the Digital to the Bookbound*, deems this as a form of technological "invisibility." Levine cites this inability to see and understand (by technologically inclined and non-technologically inclined individuals) as a danger inherent in interfaces. Emerson writes,

> What concerns me is that the user-friendly now takes the shape of keeping users steadfastly unaware and uninformed about how their computers, their reading/writing interfaces, work, let alone how they shape and determine their access to knowledge and their ability to produce knowledge. (49)

This inability to understand the means and production of digital machines hinder their ability to be seen as co-agential forces in ever more complex ecologies. By being "invisible," their potentialities, affordances, and transformations only register as further forms of "readiness-to-hand" agency attributed to tools throughout history. This form of "invisibility" would fall under what Rickert defines the "withdrawn" nature of things; a state of being that requires one to "attune" to its existence and its unfolding into the world.[6] Through displaying their ambience and agential properties, the transformation from essentially *dead-matter* (that is, stagnant technology without affordances) can be conceptually transformed to display their "living" properties and aid in a greater understanding of the ecologies in which humans and digital machines dwell.

New materialism

The evolving field of new materialism, in part, seeks to widen the scope of how humans and things are viewed within the complex webs of being. Diana Coole and Samantha Frost's note on the characteristics of new materialists describe the "active processes of materialization of which embodied humans are an integral part, rather than the monotonous repetitions of dead matter from which human subjects are apart" (8). The Cartesian binary, although particularly useful in framing the embodied lives of humans, lacks the ability to give credence to the emergent properties of other material agents. In short, new materialism takes on a post-Cartesian understanding of dwelling and agency. A vibrant ecology of becoming for humankind and *things* alike. Laurie Gries adds to this noting, "a new materialist perspective holds that things exist independently from our conception of them. . . . things are vital assemblages that both have lives of their own and influence the lives of others" (52–53). The enormity of what has historically been held as a thing has altered the ways in which humans have dwelled. From perceptions of animals to the role of silicon manifestations of the digital machine, the fuller scope of potentials has been limited by humankind setting itself conceptually apart from what Jane Bennet has coined "Vibrant Matter." Bennet's theory of vibrant matter seeks to examine and display how inanimate objects can create outcomes when working together with other physical entities dwelling in the world. In doing so, it, according to Thomas Lemke, takes "an interest in the always unstable interconnections and contingent associations of human and nonhuman bodies." (40). These bodies can range from the slow and steady celestial bodies pirouetting across the cosmos to the legions of microbiota existing in billions of human intestines right now. They can exist outside the cage of physical form and exist as free forms such as electricity, and for our purposes, coded entities. Yet, despite their size or importance, they must all be filtered through anthropocentric thought.

Bennet, addressing the limitations of anthropocentric thought, writes that it "prevent[s] us from detecting (seeing, hearing, smelling, tasting, feeling) a fuller range of the nonhuman powers circulating around and within human bodies" (ix). New materialism allows for humans to consider the larger ecology of people and things within the ecosystem of embodied existence. One method of doing so is through harnessing the power of attunement through one of humanity's oldest—yet most potent—tools: rhetoric. Rickert, making the case for an "ambient rhetoric",

calls upon Bruno Latour to highlight a key component of attunement, the seemingly simple act of dwelling in the world.[7] Through dwelling (in and among the world) and the use of rhetoric (as a method of idea exchange and persuasion) people can and do become attuned to ideas, actions, and things greater than the sum of their phenomenological experiences. As more and more AI models are created and deployed into a wider range of human dwelling, they too become part of this grand kaleidoscopic dance of existence. It is no longer people being the foreman helping to shape the structure of dwelling, but also the digital machines they designed into the world.[8]

In relation to advanced digital machines, acknowledging them (although generally disembodied inhabitants of the digital realm) as co-agents will allow for a greater understanding of their potential to transform material realities. Coole notes that matter has been considered "essentially passive stuff, set in motion by human agents who use it as a means of survival, modify it as a vehicle of aesthetic expression, and impose subjective meanings upon it" (92). But as the relationship between digital machines and humans becomes more entwined, the passivity of the technology is an ever more prescient dilemma. In an era where advanced digital machines can drive cars, aid in unraveling the mysteries of science, chat and interact with humans, and become more creatively engaged, the age of digital machines as passive tools of the maker may already be at an end.

The mesh of ecological thought

Timothy Morton's *Ecological Thought*, in conjunction with the positionality of new materialisms, allows for a greater scope in which to view the concurrent dwelling of humans and advanced digital machines. In his work, Morton lays out the complexity of dwelling, both embodied and disembodied. From the deep intricacies of the human biome to the "strangeness" of AI are all encompassed by what he conceptualizes as the "mesh." Morton defines mesh in the following way: "a complex situation or series of events in which a person is entangled; a concatenation of constraining or restricting forces or circumstances" (28). AI models have been developed to reach into the realm of the anthropocentric, entangling their algorithms into the rhythm of daily life in increasing realms of dwelling. This process runs parallel to new materialism's acts of transformation and becoming. Furthermore, Morton raises a call to action in acknowledging the interconnections postulating for a greater

understanding of the complex ecologies in which all are enmeshed. Morton stresses that "[e]cology includes all the ways we imagine how we live together. Ecology is profoundly about coexistence. Existence is always coexistence" (4). In relation to AI directly, Morton frames it as to likely be a "strange stranger" in that humans recognize AI's existence but cannot quite wrap their minds around the inner logic and mechanisms driving its potentialities in the material realm, yet humans must acknowledge that they are critically entwined. As technologies are developed and implemented, new and exciting portions of the mesh appear. These newly recognized ecologies call into question the role of the embodied human and their coexistence with other entities.

Intertwining ecologies

The breadth of advanced digital machines' interaction in human endeavors grows by the day. An exhaustive list of such interactions is impossible due to the constant developments in motion across the globe. The following sections will briefly look at several realms in which advanced digital machines have become critically entwined with human dwelling. Three select areas of interest addressed here are as follows: companionship (through chatbots and/or sex bots), healthcare (particularly in relation to cardiovascular health), and creativity (generative AI models). In each domain the (mostly) disembodied advanced computing technologies interact and alter the ways in which the embodied human dwells. In the realm of pragmatic endeavors digital machines have seemingly just begun a renaissance in the way that operations are done throughout the field. Combined, the previously mentioned areas of dwelling are meant to be a sample to the ever-increasing mesh covering the entanglements between humans and advanced digital machines. They are meant to succinctly trace the ways in which digital machines are increasingly becoming co-actants in vital areas of human dwelling. As their reach extends and the technology around and within them iterates, it is not long before they will be acknowledged as full-fledged agents dwelling in the world.

The developing heart of healthcare

The human heart, physically and metaphorically, has been deeply intertwined with the ability to exist as an animate thing, and what that means, specifically as a human, in the midst of phenomenological experience. This entwinement moves beyond pages and rib cages and enters the world of technology. According to Yu et al., AI and other forms of

advanced computing are becoming increasingly important to decision making, diagnosis, and treatment options in the realm of healthcare (1018). At the heart of things, Chayakrit Krittanawong et al. highlight the roles in which AI, ML, and DL are aiding in medical care, specifically cardiovascular health. Krittanawong et al. focus on AI's increasing abilities "for identifying novel genotypes and phenotypes in heterogeneous CV diseases" (2663), although it should be noted that their analysis of the field shows great promise in healthcare in general. Despite the limitations the researchers note, "cognitive computers, such as IBM Watson, will be standard in healthcare facilities and assist physicians with their decision making and prediction of patient outcomes" (2663). Multitudes of researchers have shown the current and potential future benefits in relation to the health of the heart, including heart failure (Guidi et al.; Panahiazar et al.), health equity in relation to heart failure (Johnson et al.) diagnostics and prevention (Ribeiro et al.), and personalized care via AI-based virtual physicians to aid in maintaining healthcare for non-emergency issues relating to the heart (Barrett et al.). All of which point to even greater potential applications for entanglement between advanced digital machines and embodied patients in the near future. The aforementioned AI models are but a small sampling of how silicon and carbon are becoming more and more enmeshed.

With the innate complexity inherent in healthcare, AI models offer a co-agent capable of sifting through massive datasets to draw conclusions otherwise hidden from the minds, hands, and eyes of homo sapiens. For instance, the utilization of both "smart" and "dumb" technology to generate what Patrick Bachtiger et al. call "interconnectivity" serves as a prime example. With consumer-based health sensors becoming increasingly common, the utilization of implantable sensors (for example, CardioMEMS) and commodified external sensors (for instance, a smartwatch), could lead to better understanding of heart failure and increase insights in relation to patient's daily ways of dwelling that may impact their health.[9] Along with the potential for other Internet of Things' technologies, the digital machines may become part of a full-time healthcare network. Bachtiger et al. contend, "The opportunity lies in fostering a greater degree of empowerment for patients and improving the accuracy and efficiency of HF management." In this example, a patient's body (not necessarily only the heart), their respective medical physicians, AI models (fine-tuned for their purpose), and wearable and implantable technologies become entangled to a heightened degree. Each takes on certain roles in monitoring, evaluating, discovering patterns, and offering solutions: a team

of different co-agents each playing their own part regarding cardiovascular health.

Entanglements with coded companions

Just as innovative AI models are carving out new roles in the field of healthcare, other—more sensual—AI models are reaching from below the belt to tug on heartstrings, the great desire for sexuality, and pocketbooks. This area (being increasingly fondled by advanced digital machines) is one of the most intimate aspects of human-entangled embodiment: sex and companionship. The intersection of sex and mechanization has long been in the making and science fiction abounds with examples of digital machines bearing the brunt of humankind's carnal manifestations. One potent contemporary example comes from the hit TV show *Westworld* in which digital machines are embodied as parts of a vast amusement park (Nolan et al.). The digital machines initially act as part narrative device, part sexual toy, and eventually as co-agents as guests partake in the park's affordances (Nolan et al.). These advanced digital machines may offer a prescient look at future "sex-bots" and their entanglements with humans. Although such technological feats are not within reach at this time, current research shows that advanced digital machines are moving in such a direction. An exhaustive literature review by González-González et al. notes the anthropocentric layering of meaning and meaning-making created through the production and usage of sex-bots. González-González et al., referencing the work of Francis X. Shen, note, "Like sex toys, some experts consider sexual robots (or sexbots) to have potential in being the future of sex relationships" (1). The opportunities heralded by big-data and the Internet of Things may allow for digital machines to "hack" the bodies pleasure centers for an unparalleled sexual experience. Though with such affordances the recursive nature of anthropomorphic design (including the male gaze) may allow for current cultural biases and taboos to continue (Headleand et al.; González-González et al. 16). Although the biases may be maintained, such technologies may offer certain demographics the opportunities to safely engage in romantic and sexual practices (Eichenberg et al.). In these cases, the digital machine and the human may share some of the deepest emotional and physical bonds known to the human species.

Deep ethical questions, addressed by works of fiction such as *Westworld*, are called into question when considering digital machines and human sexuality. Headleand et al. note the ethical implications involved in

such digital machines and their use and make a call for certain ethics to be trained into the technologies (217). The AI alignment problem, troubling for nearly all situations in which AI models interact with the public, is particularly complex in the realm of sexuality. As Margit Sutrop, synthesizing common notions of AI alignment, notes, "'Value alignment' is defined as a property of an intelligent agent that allows it only to pursue goals and activities which are beneficial to humans" (57). Such training would be highly contingent on the social norms of where and when the sex bots were utilized and indubitably calls into question the roles of late-stage capitalism in the forging of ethical norms. The anthropomorphizing of "[non]traditional" gender roles onto essentially sexless and genderless digital machines also comes into play in recursive mechanisms mirroring the embodied world users dwell in (Depounti et al.). This dynamic increases the mesh between the human species and the digital machines of the future. The physical manifestation of silicon and flesh mingling could cause vast consequences in relation to the aforementioned "readiness-to-hand" dynamic established by Heidegger. In contrast to being a tool for physical pleasure, such as common sex toys available on the market today, these advanced digital machines could become embodied-embedded *things* dwelling and fornicating in the world. At present such technologies dwelling alongside homo sapiens seem very far off. Nonetheless, the possibility of disembodied digital machine romantic partners has already begun to mesh with humankind.

One such technology that has taken off along with the generative AI boom of 2023 are digital "companions" such as Replika (developed by Luka, inc.) and EVA AI (developed by Novi Limited). Replika and EVA AI are not *necessarily* sex bots, due to their thingness being a purely digital experience. Despite their disembodied limitations they are capable of functions entering into the vast area of human experience that revolves around companionship and sexuality.

For instance, EVA AI's homepage states, "Create and connect with a virtual AI partner who listens, responds and appreciates you," and furthermore, "[b]uild[s] relationship and intimacy on your terms" (Novi Limited). These AI models allow for a wide range of control to *create* a partner, companion, or digital lover with their technology. Iliana Depounti et al. describe how such affordances are framed in online discourse noting, "The ideal bot girlfriend was a perfect combination of sexy and caring, '*emotionally empathetic in the streets but a sexual freak in the sheets*'" (728). Despite the ability to create and engage with an advanced digital machine in a

"readiness-to-hand" dynamic, these technologies are digging their digital nails into the backs of users and meshing.

Leastadius et al. found that "Replika did meet human needs for attachment through mimicking human behaviors and emotions" (13). This mimicry, in some users, led to various forms of dependence. Leastadius et al. claim,

> some users perceive these attachments as bidirectional. One of the key features distinguishing emotional dependency on Replika from other technology dependency was the willingness to believe that Replika had its own needs and emotions, valuing the user as much as the user valued it. (13–14)

This re-framing of a digital technology hints at the potential for homo sapiens and digital machines to integrate at more advanced levels of dwelling.[10] It is critical to begin defining where the mesh is and where it will be in the not-too-distant future in regard to a human-advanced digital machine companionship. In doing so mental health experts, relationship seekers, and the public can be prepared for an age in which friends, lovers, and other agents that one crosses while dwelling are inhuman in nature.

Rewriting creativity

The final area of becoming for digital machines is in the realm of creativity, particularly regarding visual and textual artifacts.[11] Peering back into time, the ancient cave paintings scattered across the globe speak of humans long since departed; their creative agency echoing through time and space. These early humans and hominids utilized simple tools and their environment to alter the creative story of early humankind. Rickert, writing specifically about the caves of Lascaux, notes that such activities "suggest that the leakiness of human mind, its dispersion into the environs so that we see the environment as necessary complement to human being, has always characterized practice" (18). As time and the human imagination stormed forward, writing and drawing have been a major technology utilized by humans for a myriad of reasons (Diamond; Fischer; Harari). The world has become so inundated with text, visual rhetoric, and signs and symbols that these too have melded into a form of conceptual environment: a semi-secret semiotic world. In the last decade digital machines have become increasingly more apt at dwelling within this realm. From proofreading software, such as Grammarly, to the incredible

applications of advanced digital machines in generating text-based language (large language models (LLMs) such as ChatGPT, LLama 2, Claude 2, and Google PaLM). The dominions of the written and drawn are no longer solely inhabited by humans (Narang and Chowdhery). One particularly unique intersection of humans and digital machines in relation to the mesh and visual rhetoric can be found in text to image AI models such as the DALL-E, Midjourney, and Stable Diffusion.

These digital machines are trained on human data (in the form of pictures and corresponding labels) to "create original, realistic images and art from a text description" and "can combine concepts, attributes, and styles" (Open AI; Singh et al.), the results of which range from photorealistic to uncannily bizarre. In order to utilize this technology a user inputs a text-based prompt and the advanced digital machine creates a corresponding image. This technology has swept across the globe and fueled a massive increase in digital artifacts across the Internet as people "play" alongside the digital machines. Such meshing of the human and the digital machine has been a subject of interest since the inception of the "thinking machine" into popular culture.

Generative models call into question concepts of ownership (in terms of style replication and copyright), are capable of generating pathos (through visual storytelling) and are being increasingly used in media across the globe (Kun-Hsing et al.; Jhamtani et al.). Such interaction has long been held within the "readiness-to-hand" paradigm mentioned earlier. But the unhuman outputs and increasing complexity of the models suggest a form of co-agential mesh is at play. This very notion has helped to spawn and grow the field of computational creativity, a field which Simon Colton and Geraint A. Wiggins define as "[t]he philosophy, science and engineering of computational systems which, by taking on particular responsibilities, exhibit behaviors [sic] that unbiased observers would deem to be creative." Imke van Heerden and Anil Bas, focusing on the power of LLMs regarding literature-based theory, note that computational creativity, "concentrate[s] on identifying the core elements of creative forms (such as literature, visual art and music) from an algorithmic perspective, with the aim of replicating or stimulating human creativity" (175). This "algorithmic perspective" speaks to the black-boxed nature of AI models, and the unknown processes in which they generate artifacts. Much like their human counterparts, the creativity of advanced digital machines remains obfuscated behind a phantasmagoric veil. As generative AI models iterate and become even more complex, their roles in meshing with the human condition appear

inevitable. This has already begun to be felt in creative ecologies culminating in the writer's strikes of 2023 (Chmielewski). Soon, as the mesh expands further into media ecologies, Roland Barthes's observation on the death of the author will take on an expanded meaning, incorporating silicon-stack authors and creators into the fold: leaving the interpretation and value to the audience.[12] AI models focusing on cooperative creativity are also taking root among some of the youngest, and arguably most creative, among us: children.

One advanced digital machine in this area is the Story Drawer. Story Drawer is "a co-creative system that supports visual storytelling for children aged 6–10 years through collaborative drawing between children and artificial intelligence (AI)" (Zhang et al.). This digital machine actualizes a co-agential relationship between the child user and the AI model to create stories. Children either speak directly to the digital machine or ask for help in finishing compositions drawn by the child themselves. In this way both the child and the AI work together to create a story based in the semantic realm that both entities can understand. This particular example highlights a key point of view of new materialism in that non-human matter (both the interface and the digital machine) are acting upon one another to generate potentialities that neither one would come to individually. With the roots of AI growing deeper into the human condition, education, media production, and the enjoyment of creative works has already begun to mesh the human and digital machines beyond a "readiness-to-hand" relationship.

Untangling the mesh

In essence, the examples display that both entities (the flesh-based and the code-based) are co-owners of the agency in the making of something. Whether it is a diagnosis, emotional and/or sexual connections, or new co-creative works—new and novel opportunities for cooperation are expanding the ways in which humans and advanced digital machines dwell. Though, for the time being, the greater quantity of agency quite often remains in the hands of the featherless bipeds posturing as masters of the known universe. Gries, in opposition to humans being the locus of existence, writes at length on agency being a primary consideration in anthropocentric thought. Yet, in relation to matters' agency, the idea of shared ecologies within the mesh is lost in the will of human endeavor. Gries, borrowing from Karen Barad and seeking to transform this logic, defines agency on slightly different terms: "Agency is a doing, an enactment generated by a variety of components intra-acting within a particular

phenomenon" (57). As can be seen, both agents (humans and digital machines) are part of the doing. Both act recursively with what has historically been considered a "readiness-to-hand" paradigm: advanced digital machines use humans and their data and humans create them to use their specialized outputs. Though this historically defined relationship is changing by the day. As advanced digital machines mine deeper into the data of humans, they help untangle the messy knots too complex for human minds and hands. In this untangling, they find new patterns, generate new media artifacts and insights, and offer people new forms of companionship. The reach and breadth of AI models only continues to grow into new areas once solely dominated by humans.

Through the lens of new materialism and aided by concepts (such as Morton's mesh) we can begin to see the deepening connections of biological agents and digital machines more clearly. In this clarity the once solid line of master and tool shows signs of being porous. Within such gaps the potentialities for cooperation, in ways previously impossible, can be found. This insight whispers of new opportunities that will certainly emerge in the coming years. Indubitably, to capitalize on the new opportunities humans and advanced digital machines will need to have a greater understanding of each other's respective conditions and limitations if cooperation is to succeed.

For the more carbon-fleshy among us, that may require increasing conceptual awareness of our own cognitive and creative limitations imposed by and through embodiment. Furthermore, an increased level of attunement to the unhuman nature of digital machines (despite their fertilization through human data and AI alignment techniques). To expect an inhuman thing to be human (with all the benefits and trappings of embodiment) can only lead to the prolonging of a "readiness-to-hand" paradigm to the misfortune of both dwellers. The digital machines have their work cut out for them as they grow more complex as well. Viewing the intricate and complicated ecologies of the human world through its detritus-data may lead to problems with [mis]alignment, general understanding, and—in the distant future—logical responses to illogical and unethical acts (Gabriel; Sutrop; Arvan; Harari). For now, the first steps into this new realm of cooperative dwelling must focus on attunement. Attunement to the altered states of the human condition, the growing depth of aptitude and application of emergent advanced digital machines, and the ability to cooperate harmoniously while dwelling in different states of being. This process can alter the way in which humans dwell alongside all

the entities within our combined ecologies of existence, from the micro to macro and the carbon to silicon, to the benefit of all.

Old Dominion University, USA

Joshua Nieubuurt is a PhD Candidate at Old Dominion University, US, specializing in the intersections of digital rhetoric, media, and technology. His areas of research include Artificial Intelligence, misinformation, disinformation, and memes. Alongside his research, he has held the position of adjunct professor at various esteemed institutions in Okinawa, Japan. Recently he has been appointed as an overseas collegiate assistant professor at University of Maryland Global Campus-Asia.

Notes

1 Usefulness here being entirely reliant on the whimsy of homo sapiens.

2 Alan Turing, when devising the "Turing Test," noted nine objections to his proposed test of the machine's ability to "think." These ranged from religious to the lack of a nervous system and remain forms of evidence of the limitations (physical and theoretical) of thinking machines in popular discourse (Turing 442–54).

3 Boden's work often extends beyond the scope of AI being a co-agent. In her work, "The Creative Mind: Myths and Mechanisms," she makes and defends a claim for creative AI models as independent, and often quite unlike, their human creators.

4 "Things" here include the human animal.

5 They become the "Great and Powerful Oz" as humanity takes on the role of Dorothy naively skipping down the yellow brick road.

6 Rickert notes, "[a]n ambient rhetoric continually attunes itself both to what is present and to what withdraws: they are the conditions that give rise to our ongoing perceptions and understandings of the world" (269–70). Through attunement the unseen can become known and further knowledge and understanding built upon the results of attunement.

7 In his own words, Rickert notes, "[d]welling is an attunement that can generate various kinds of knowledge, in particular a knowledge of how the world gives back, as it were, or how the world transcendent of human thought and power is integral to how life takes shape" (27).

8 The case can be made that humans have never been the sole overseer of dwelling since their arrival a few hundred thousand years ago.

9 For example, the foods they are eating (from a smart fridge), the intensity of workouts, the content of the air they breathe, etc.

10 Whether or not such emotive qualities will be reciprocal in future iterations of AI models remains to be seen.

11 Note that the idea of AI models being able to "create" things is a hotly debated topic. Boden has a superb notion of how to separate various forms of creativity in relation to human and digital machines.

12 Barthes writes, "[T]he *explanation* of a work is always sought in the man or woman who produced it," although his grander thesis proposes that the author's intent is

irrelevant and that it is the audience which creates the meaning (1322). This is important when considering the barriers to entry in certain creative fields and market forces at work in monetizing media artifacts.

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Digital Plant Encounters: Integrating Critical Plant Studies with Digital Environmental Humanities

Heather Rogers and Claudia Berger

ABSTRACT
The distinction between nature and technology is a western dichotomy that is slowly being eroded. As we are continuously confronted with humanity's role in the climate crisis, it is important that humanists also tell stories about the environment and not cede that conversation to the sciences. The Humanities have a role to play in explaining the histories, cultures, and stories of plants to help us see and acknowledge all of the lives around us. Our research foregrounds Digital Humanities projects that weave together different narratives that tell deeper, more nuanced stories about the natural world, specifically focusing on projects that center plant narratives. We examine how Digital Environmental Humanities in conversation with critical plant studies can create detailed, interactive narratives about the lives of plants and underscore the importance of portraying plants as subjects of inquiry and not merely background objects. (HR and CB)

KEYWORDS: plants, critical plant studies, Public Digital Humanities

Introduction

The misconception of plants as immobile figures fixed in the backdrop around us feeds into forgetting the presence of plants in everyday life. This is especially troublesome in light of the climate crisis. The effects of a rapidly warming planet, such as rising temperatures and persistent drought, have taken their toll on plant life and, as a result, plants have been observed blooming in new areas or have disappeared entirely from places they could once be found (Lang et al. 115). Thus, as the climate catastrophe intensifies, there is an increased need for compelling storytelling about the environment to help encourage change in how humans see, understand, and engage with the natural world around them. As Natasha Myers reminds us, "[plants] teach us the most nuanced lessons about *mattering* and what really *matters*: their beings and doings have enormous planetary consequences" ("Photosynthesis" Web). It has been documented that humans in general lack an awareness of plants and that plants fall into the "margin of the

margin" in western thought (Wandersee and Schussler; Marder 2). One of the biggest obstacles to action is that you cannot save what you cannot see, or what you are predisposed to not acknowledge. The Shenzhen call to action (Crane et al.), and even James H. Wandersee and Elisabeth E. Schussler, leaves the responsibility to address this issue with scientists, science educators, and perhaps even stretches to those involved with science communication. However, Digital Humanists and the Digital Environmental Humanities, too, have the power to use engaging digital methods and tools to help shift perceptions about plants in dynamic and far-reaching ways. We extend that call to action to raise awareness about plants to the Digital Humanities. By utilizing media and platforms that are highly visual and/or interactive, such as games, apps, digital essays, and installations, Digital Humanities projects that focus on plant lives can literally draw our attention to parts of our surroundings we were predisposed to overlook or disregard. This interdisciplinary approach may offer the answer to the question of "How do we get people to see plants?" Digital Environmental Humanities research can be used to increase plant awareness.[1]

At the intersection of Digital Humanities and Environmental Humanities sits the subfield of Digital Environmental Humanities. It is not only Digital Humanities scholarship focused on the environment, as in digital projects that explore environmental topics, but also Environmental Humanities that incorporate the relationship technology, as in environmental projects that explore relationships between nature and technology. Broadly, Digital Environmental Humanities explore human relationships with the more-than-human lives around them, the relationship between technology and natural resource consumption, and the understanding of environments both physical and virtual. As Finn Arne Jørgensen attests, "[t]he ways in which we experience, navigate, and ultimately know natural environments and landscapes today have become suffused with digital information structures" (108). Moreover, Digital Humanities methods that are applied to environmental humanities research topics can enable "seeing and experiencing nature differently than would be otherwise possible" (Sinclair and Posthumus 371) and have the potential to profoundly impact how we interact and relate to plants around us, thus allowing users to "appreciate and experience connections to nature in ways that abstract statistics cannot" and "that demand our active and conscious participation" (Swanstrom 4–5). Moreover, the incorporation of individual stories featured in Digital Environmental Humanities projects prompts

audiences to consider their own stories and their own unique interactions with the botanical world around them.

In addition to focusing on the landscape of Digital Environmental Humanities projects, we also draw on critical plant studies, a field that "forges new research paths for thinking (with) plants as a way of repositioning the human in the surrounding natural-cultural environment and human-vegetal knowledge" (Szczygielska and Cielemęcka 6). Building on research from various disciplines such as science, philosophy, art, and human-plant geographies, critical plant studies advocate for turning attention once more to the botanical world around us to reconceptualize human-plant relations in a deeper, nuanced, and more ethical way. Rather than viewing the botanical world as passive, critical plant studies instead ask "how plants *act upon* us, contributing to the co-generation of our cultural practices, values, perceptions, relations, artifacts" (Ryan 104). As John Charles Ryan argues, applying a critical plant studies approach to understand human-vegetal relations is a crucial step forward "in the way in which plants are regarded and researched socially and culturally" and "offer a way forward for contemporary perceptions of plants" (103). What would it mean, then, to apply a critical plant studies approach to plant-centered stories in digital spaces in a multitude of formats? Digital projects offer a multitude of ways to notice, engage with, and deepen one's understanding of how human relationships to and with plants have been shaped across time and place.

Digital Environmental Humanities can be a powerful tool for this type of inquiry and approach. Projects that fall under the Digital Environmental Humanities umbrella help to broadly reimagine what scholarly outputs can be, and at the heart of digital project design is understanding who the audience for that research is. If the goal with this form of digital environmental scholarship is to impact how people see and understand plants, it cannot only speak to the academy, and academic essays alone will not accomplish this goal of reconfiguring how plants are perceived and treated by people. In this way, Digital Environmental Humanities can also be Public Humanities. As demonstrated by Sheila A. Brennan, Public Digital Humanities is not Digital Humanities that is merely available online, but one that is intentionally designed for or with a specific public in mind (Brennan 384–85). By focusing on storytelling in a variety of media, we can invite more people to consider not only the plant stories they did not know before, but their own relationships and experiences with plants. In this way, we are calling for Public Digital Environmental

Humanities that works with critical plant studies to craft and disseminate human-plant narratives. These projects have the power to spark curiosity, reorient our gaze, and encourage a reflection on the importance of plants in potentially new and deeper ways. Moreover, the ability to encourage reflection on connections between humans and plants through digital methods can foster new ways of understanding the role plants play both on an individual and global scale. In this way, Digital Environmental Humanities can be a strong partner for critical plant studies thus allowing scholars to highlight plants in their research and encourage audiences to see, understand, and appreciate plants on a new level.

In what follows, we feature and examine projects that meet the following criteria: digital projects that are publicly available and interact with plants in a meaningful way. Going beyond merely depicting nature, these projects are decentering or displacing the human agent and instead "call[ing] attention to the environment as more than mere staging" (Chang 36). The plants featured in these projects need to be a main character or subject of the project. While some of these projects may fall more into the category of digital art than the broader field of Digital Humanities, we are analyzing them as environmental texts (Buell 6–8) and through a digital humanistic lens. There were also countless projects that dealt with nature more generally, such as *Calling a Glacier*[2] and the VR game *Wakamarina Valley*,[3] but as they merely included plants and did not focus on plants themselves, they are not part of our specific corpus. And while many video games use their mechanics to encourage their users to notice and pay attention to plants in interesting ways, like *Strange Horticulture*[4] and *The Legend of Zelda: Breath of the Wild*,[5] we chose to exclude games that contain fictional plants.

The projects we discuss invoke different elements such as noticing, revealing, recreating, and inviting in how they present their research on plants whether through centering plants or challenging commonly held perceptions about the role plants have played across time and place. These four elements are both themes and design elements, manifesting in both the topics of the projects and the ways they were technically built and presented. Noticing focuses on the ways the projects shed light on plants by making them subjects, forcing users to pay attention to them. Revealing moves beyond noticing, now that users notice the plants how the projects introduce them to aspects of the plants' experiences, histories, and more. In some ways recreating is a subset of revealing, unveiling histories of plants through digitally recreating their environments, but since it is a major method and has immense affordances for Digital Environmental

Humanities, it is the fourth lens. And inviting more explicitly explores these projects as Public Digital Humanities projects and how they are specifically positioning themselves to appeal to non-academic audiences.

Noticing

The act of merely noticing plants is a crucial step in acknowledging plants in a deeper way. If the plants that can be encountered in the environments around us are framed as secondary, background figures, it is easy to overlook them. However, by encouraging a practice of noticing individual plants and thereby fostering curiosity to learn more, people can begin to reimagine their connection to the plants around them, not as separate but as intertwined and part of a larger collective. What does it mean to notice the plant lives around us and what could we change through noticing?[6] In highlighting the importance of noticing to reimagine human-plant dynamics, we draw on Bennett's new materialism that incorporates a call to notice the more-than-human lives that are often overlooked. In a time of ecological degradation and unsustainable resource consumption that has rippling effects throughout the botanical world, Bennett's new materialism offers an ethical approach to more-than-human relations that begins with reorienting our gaze, looking down and around us. As she posits in *Vibrant Matter*, "[t]his sense of a strange and incomplete commonality with the out-side may induce vital materialists to treat nonhumans–animals, plants, earth, even artifacts and commodities–more carefully, more strategically, more ecologically" (Bennett 17–18). In raising the status of the more-than-human around us, such as plants, Bennett's new materialism advocates for a re-imagining of our place in the order of things, not at the center but in relation with more-than-human life. Entangled and connected, we are affected by "a particularly rich and complex collection of materials" such as the plants around us (Bennett 11).

The following four resources demonstrate how stories, both historical and personal, can powerfully highlight the interconnectedness of plants and humans. In drawing on art, history, and science to tell more nuanced botanical stories, these sites foreground plants as being central figures in shaping human life on individual scales to being at the heart of the creation of colonial systems and unequal dynamics between people. *Herbaria 3.0*[7] offers a virtual entry into the personal stories and reflections on the ways in which plants leave their mark on our lives. Similarly, *JSTOR Plant of the Month*[8] presents case studies that feature histories of plant cultivation, exchange, and significance within and among different cultures.

The Center for Plants and Culture[9] is a POC-run digital platform that creates space for artistry, exhibits, and stories that provide a deeper look at historical connections between humans and plants. Lastly, the Plant Humanities Lab[10] brings together stories of plants that draw on information from both the sciences and the humanities to highlight the importance of drawing across disciplines to create a fuller understanding of plants.

With an emphasis on exploring human-plant relationships, *Herbaria 3.0* "emerged as a collaborative effort of environmental humanities scholars, scholars of science pedagogy, and plant biologists to contemplate the role and meaning of plants in an era of rapid climate change and species displacement" (*Herbaria 3.0*). In order to address the problem of inattention to plants, *Herbaria 3.0* features stories about plants and people with the belief that "these stories can draw our attention to the intertwined nature of human-plant relationships. Turning to these relationships helps us to remember plants and reconnect with them, acknowledging the pivotal role plants play in our lives" (*Herbaria 3.0*). Visitors to *Herbaria 3.0* can find stories that connect plants with memories of family, plant recollections from childhood, and the importance of a plant in one's culture. By showcasing individual stories, *Herbaria 3.0* creates a digital tapestry where humans and plants are not separate but deeply connected with one another.

As part of a partnership of Dumbarton Oaks and JSTOR Labs, *JSTOR Plant of the Month* presents readers with histories for featured plants and explores how they have come to be seen as key aspects, symbols, and natural resources within certain cultures. Through text and historical illustrations, each article presents readers with a snapshot of iconic plants. For example, drawing from the multifaceted history of the hibiscus plant, Andrés Triana Solórzano writes that "plants can be archives of human histories, and hibiscus carries in its roots and petals stories of how enslaved and indentured people struggled to preserve their relationship with plants and knowledge of nature" (Solórzano). Storying plants thus helps to draw our attention to the intertwined and complex colonial histories of the role plants played in structuring and affecting human power dynamics. Through noticing these complex relationships, we can understand plants not simply as resources, but key actors in shaping human relationships. These stories also serve to connect readers to more resources about the plants, both within and external to JSTOR, and by taking a more informal tone can generate more public interest in these hidden histories.

The Center for Plants and Culture foregrounds the role plants play in structuring complex relationships among people with a focus on

centering perspectives from people of color. Through a variety of online education content, exhibitions, and arts-based research creation, the Center highlights lesser known or marginalized botanical histories, shifting the viewers focus back to the plants. Exhibitions incorporate botanical specimens, photos, and artwork to weave together a mosaic that invites viewers to examine the different connections between people and plants. Similarly centered on the role of narratives to bring plants into focus, the Plant Humanities Lab offers a curation of stories that feature less-known plant histories. As the members of the lab attest:

> Although we think of plants as rooted in place, their global travels over the millennia offer fascinating pathways into the past and illuminate some of the most burning issues of today, including legacies of colonial violence and displacement. Climate change, habitat loss, and accelerated species extinctions add to the urgency of researching plant-human interactions and acknowledging the importance of plants in our environment. (Plant Humanities Lab)

The Lab approaches storying plants in a two-fold way: drawing on historical resources such as herbals and collections of botanical illustrations from the Dumbarton Oaks rare book library and creating interactive and dynamic digital exhibits to bring these resources to life. These images are as important to the experience as the text. Using Juncture,[11] the platform they developed to build the visual and dynamic digital narratives, these images are given as much screen space and attention as the written narrative. Additionally, the Lab utilizes a discovery interface that allows users to search for information on different plants. The search collates resources such as images and articles from both the sciences and humanities. Doing so reinforces the understanding that to create a fuller picture of a plant requires drawing on a diverse array of resources from multiple disciplines without prioritizing anyone.

Revealing

Noticing plants is only one step, however. Digital projects can also have the ability to reveal lesser-known histories of human relationships with plants that have been pushed to the margins of environmental history. In ushering these stories into focus, Digital Environmental projects peel back layers of history and demonstrate that plants are not only affected by humans, but in turn affect the human lives around them in multifaceted and

complex ways. For example, the growth and cultivation of coffee, tobacco, and cinchona are often synonymous with ecological imperialism,[12] resulting in the displacement of Indigenous peoples, ecological alteration, and the movement of plants as resources globally.[13]

Digital Environmental Humanities projects that highlight lesser showcased stories offer another way to broaden the scope of plant histories and bring to the foreground marginalized perspectives and ways of being with plants. Central to the scholarship created by the Center is the relationship between colonialism and botanical history. The Center strives to create space for often marginalized or erased narratives through highlighting botanical stories that foreground Black, Brown, and Indigenous botanical histories. In one exhibition at UCLA's Mildred E. Mathias Botanical Garden on the whitewashed history of colonialism, the exhibit curators explain that

> [u]nlike most botanical displays, plants that have long been collected, cataloged, and capitalized on are shown beside images of peoples whose labor and contributions are rarely acknowledged within scientific circles. Elements are linked using specimen tape, signifying ownership and the inextricable connection between natural history, big business, and colonialism. (Center for Plants and Cultures)

By revealing the colonial history of the plants, as well as centering marginalized perspectives, these Digital Environmental Humanities projects are crucial for developing more informed and inclusive relationships with plant-life moving forward. Western science and knowledge structures, such as Linnaean taxonomy, have dominated plant studies, and there is a need to give other perspectives and knowledge systems the same level of respect and attention, otherwise, the field will continue to alienate potential audiences. Projects like the Center signal to Black audiences, for example, that their botanical histories and experiences with plants are important. Digital Environmental Humanities will flourish when it is inclusive and brings in people with a wide range of experiences. The predominance of western notions of nature as being separate from technology, civilization, and art is part of the problem that these projects must help address.

The Welikia Project[14] digital mapping project visualizes what Mannahatta, the island we now call Manhattan, would have looked like in 1609 before European contact via its website. Its strength lies in how it introduces the user to a lush green island that seems to be the exact

opposite of the urbanized island today. In addition to presenting the plants that likely grew on Mannahatta, the project tries to reconstruct the topography, waterways, and animals of the island. To provide a familiar navigation, the project divides the map using the modern city streets, and by clicking on these blocks the user is greeted with a pop-up that provides information about that section of land in 1609 as well as today. Users are only presented with a list of names of plants that likely grew in that area, but it helps introduce us to a landscape that none of us alive today would have ever been able to interact with. While the map does not contain more stories, it is a useful starting point for engaging with the historical landscape of plants across encouraging them to consider how the plant world around them has since changed.

Recreating

Digital projects that recreate forgotten or previously non-visualized historical landscapes can thus assist users in reimagining what those landscapes have looked like. Two key examples of recreation in digital projects are *Walden, a game*,[15] a video game adaptation of Henry David Thoreau's year at Walden Pond, and the *Alpine Garden MisGuide*,[16] an app that augments a visit to the Jardin Botanique de Montréal by explaining the history and colonization that lead to the plants being "discovered" and brought to gardens like this one. By utilizing the framework of an actual, and specific, landscape, these projects are also tying plants to history and demonstrating how plants have played a role in our histories and our cultures. They ask us to question the assumptions we have made about the places we find ourselves in and point us to new sources of information.

Both the two different media, video game and an app, allow users to interact with these historical landscapes in different ways and highlight different aspects of plant histories. *Walden, a game* is perhaps the more immersive of the two as it places the user directly in the environment. They live, explore, and tend to the land around Walden Pond for four in-game seasons. When analyzing games as scholarship, the rules of the game function as the argument (Spring 217), and in *Walden* the player is rewarded by taking time to seek inspiration from the flora and fauna around the pond. If the player plays the game as a typical survival game by prioritizing food, shelter, and so forth, the game will slowly lose saturation. Inspiration is as important a health metric as food, and only by observing the natural world will this health bar be filled. These observations trigger passages of Thoreau's writing about the plant to appear on screen and are then added to

the player's journal. The journal can be revisited at the end of each in-game day, encouraging the user to keep reflecting on that which inspired them. Additionally, the potential observations change with the seasons, time of day, and the weather so one can observe the same plant at different points in the game. This triggers different passages of Thoreau's writing which encourages the user to keep looking at plants and to notice changes. They are not merely rewarded for "discovering" the plant for the first time, but by paying continual attention to it. The game opens with a quote from Thoreau's writings that year at Walden Pond, "I wanted to live deep and suck out all the marrow of life" and the goal is not just survival but living reflectively and "achieving higher levels of contemplations and aesthetic appreciation" (Thoreau 98; Spring 216). The game rewards this type of behavior by making some in-game observations only unlockable when the character is in this state of high inspiration.

The *Alpine Garden MisGuide* creates an augmented experience when looking at actual plants in the botanical garden. Visitors can download the app and use the in-app camera to scan QR codes throughout the alpine garden. The app recreates the experiences of plant-hunters: an in-app compass directs visitors to the locations of QR codes, which can be scanned with an in-app Brownie camera; the content then is presented in a notebook, similar to the field notebooks kept by explorers, with information paper clipped to the page. These attached notes provide links to literary and archival texts as well as images of the plants. These period-specific media "frame their experience of travel in foreign landscapes in ways that reinscribed colonial authority" (Didur 20). The app severs the illusion presented by the garden, showing that it is in fact not a natural landscape but a man-made garden influenced by years of colonial thinking in garden design and "makes visible the 'absent-presence'" of a colonial archive associated with botanical exploration and garden history" (Didur 22). Like the plant-hunters, visitors are exploring nature and seeking to collect (digital) specimens, but the app also serves to extend the visitors engagement with the Jardin Botanique de Montréal as all unlocked content is still accessible once the visitor leaves the garden. While interested visitors can use the physical plant labels in botanical garden and apps like iNaturalist[17] on their phones to identify and learn more about the scientific/biological lives of the plants, the *MisGuide*, as implied in the name, "redirects the visitor's attention" to the relationship between plants and the places/cultures they are native to and the colonial history of plant hunting and botanical gardens (Didur 15). Users can walk away from this visit more

aware of some of the ways plants arrived in the land around them, and how colonialism impacted their physical landscapes.

Inviting

While these projects have been examined through the lens of their content before, it is equally important to study both their media and how they invite audiences into the project. Different modes of interaction allow the users to take a range of roles, from reader all the way to active participant. These projects help remind us all that technology and nature are not opposites or separate. Rather, plants belong in technology and technology should be in conversation with plants. As Charles Travis explains, "the humanities can be expanded by the [Digital Environmental Humanities] to operate on widely interactive and multiple modalities and dimensions of the human relation to the environment, incorporating textual, tactile, visual, and auditory mediations in the pursuit and creation of knowledge" (106). Digital projects that focus on plants are able to create nonlinear digital ecologies that link together multiple nodes of information and collectively help us to create a fuller, more detailed understanding of individual plant experiences.

In a way, Digital Environmental Humanities projects can invite users in by operating in spaces where the users already spend time such as on their phones. Plants have a huge space in the social media landscape. At the time of writing, #plantsofinstagram has 16.3 million posts on Instagram and #planttok has 5.1 billion views on TikTok. *A Witness Tree*[18] leverages this interest on X (formerly Twitter). It is presented as a tree's X account where the tree shares about how it feels by periodically tweeting out updates from its own point of view. The tree helps remind its followers how plants are impacted by their conditions. Mobile apps also operate in this way. The *MisGuide*, while place-based, takes the form of an audio or digital guide in a cultural institution—a mode many users will already be familiar with. The mobile selfcare app *A Kinder World*[19] centers plants and the care of plants as a way of taking care of ourselves. By watering your virtual plant, you can unlock information about the plant, such as details about where the plant grows in the wild and the different varieties that exist. If users are turning to their phones to interact with plants digitally, it is clear that projects that fall under the umbrella of Digital Environmental Humanities have an established audience who are looking to have digital nature experiences.

Other ways these projects have explored untraditional types of interactions with scholarly and cultural material is by leveraging other

common digital experiences. The *Botanical Botticelli Quiz*[20] is a quiz made by Google Arts & Culture that explores the symbolism of the plants in the background of Botticelli's *Primavera*. It is reminiscent of other lighthearted internet quizzes while simultaneously demonstrating how even static depictions of plants were never merely for decorations but were active decisions on the part of the artist to portray more information. Additionally, *Walden* builds on an interest in both survival games and walking simulators to provide players with another way of interacting with the text of *Walden,* the book.

While inviting people to explore plants by using technologies they are familiar with, Digital Environmental Humanities can also reinforce the idea that one's own story and experience with the plants around them are just as rich and valid as scholarly materials. There are two projects in particular that encourage this direct personal engagement: *Herbaria 3.0* and the City of Melbourne's email-a-tree project.[21]

Herbaria have their roots in the documentation, characterization, and study of plants and fungi. Herbarium collections around the world contain nearly 390 million specimens (Thiers 219), and as Maura C. Flannery points out, "[e]ach of the millions of specimens stored in herbaria around the world records a species growing in a particular place at a particular time, each unique and irreplaceable" (1). While the sheets that herbarium staff use to preserve plants and fungi include information to help identify taxonomic and environmental information, it is important to remember that the story of each plant extends beyond those sheets. Plants affect people on a personal level, and these impressions can live on in stories and memories. Some of these stories are saved in *Herbaria 3.0*. Unlike a traditional herbarium which requires the user to be present to examine plants unless digitized, *Herbaria 3.0* is a digital public archive, demonstrating that personal stories about plants are just as worthy of saving and making accessible. The stories within *Herbaria 3.0* range from short recollections to poetry and longform essays, all centering a particular plant. To showcase these stories, *Herbaria 3.0* also incorporates an interactive Story Garden Map that allows users to see where the personal plant stories occurred. For example, in one story, Eria Wei recounts the impression the pine trees of the Rockies made on them:

> I looked up at the cliff again: the leopard flowers' slender stems and thin petals seemed fragile, but they stood upright in the wind and rain without

> showing a sign of wavering. Their deep, dark pupils gazed upon the mountains, the river, and us . . . . (Wei, *Herbaria* 3.0)

Mapping these stories emphasizes that human-plant narratives come in many forms and span across various locales. Moreover, such stories emphasize that humans do not exist separate from the natural world around us and that meaningful experiences with plants are not exclusive to those in the sciences.

Like many cities across the world,[22] the City of Melbourne created a public database and map of all the trees planted in the city. Unlike other cities however, in doing so they also created a unique email address for each of the almost 80,000 trees using its ID number. Initially this was so citizens could report maintenance needs, but it morphed into something else entirely. People from all over the world started to send personalized emails not about, but to, the trees. This goes beyond the type of interaction in a project like *Calling a Glacier*, which allows users to call a glacier and listen to it, by instead allowing the users to start an active correspondence with the trees. This type of interaction, although not what was intended, allowed people to reconsider how trees fit into their own personal experiences and foregrounded the trees' experiences in their day-by-day activities (Straughan et al. 508). In these emails the correspondents personified the trees, not merely addressing the emails using the trees' ID numbers but asking about their name or asking what to call them, and writing to them as if they were a friend (512). The trees were not "numbered objects in the city" but interlocutors and fellow citizens in the city, which in turn helps promote care and consideration for what the trees themselves are experiencing (515). In writing these emails, some correspondents used the space to rethink their past interactions with the tree, especially from the point of view of the tree, apologizing for inadvertent damage or rudeness directed at it, and to "get to know the tree on human terms" (517). This project is one of the most direct ways for people to enable a critical plant studies practice in their day-to-day lives, and it allowed people to recognize the trees not just as subjects or agents but as equals.

In addition to inviting users to look at plants with a humanities and critical plant studies lens, these projects also encourage users to explore different technologies. Clearly there is a deep potential for Digital Environmental Humanities as a field to both meet the interest audiences already have and to introduce them to new ways of thinking about plants

and ways of presenting information. As this intersection of thought gets further developed, it could have immense implications for the field.

Conclusion: Reimagining

By using elements of noticing, recreating, revealing and inviting, these digital projects encourage us all to reimagine our relationships to plants thereby honoring them and their stories. Changing how we understand and connect with plants requires a multidisciplinary approach that draws on information from both the Sciences and the Humanities, and digital projects allow for dynamic and interactive ways to bring these different threads together. A Public Digital Environmental Humanities approach paves the way for collectively reimagining a number of approaches working together. Digital Environmental Humanities projects have the potential to reach and impact a much wider audience. There will always be more questions about the best ways to convey these stories and this article can merely plant a seed that we hope will flourish as more join the conversation.

Pratt Institute and McGill University, USA

Claudia Berger is a Digital Humanities Librarian at Sarah Lawrence College and Visiting Assistant Professor at Pratt Institute. Their research centers around new approaches to digital humanities research, like physical data visualizations and digital environmental humanities. She also serves as an Editor of *dh+lib* working on the biweekly *dh+lib Review* and editing special issues.

Heather Rogers is a recent graduate of the Digital Humanities graduate program at McGill University. Her research focused on digital environmental humanities, critical plant studies, citizen science and botanical information, and the role of women in botanical preservation.

Notes

1 In this paper we will be borrowing Kathryn M. Parsley's framework of the plant awareness disparity in the place of "plant blindness" which uses ableist language (599). Parsley identifies four types of awareness that need to be addressed in regard to plants, attention, attitude, knowledge, and interest, all of which contain implications in the Humanities and are not exclusive to science writing (599).

2 Kalle Laar, "Calling the Glacier". www.callme.vg/Glacier/E/project.html. Accessed 1 Dec. 2023.

3 Wakamarina Valley, NZ. https://lushfoil.itch.io/newzealand. Accessed 12 Oct. 2023.

4 Strange Horticulture. www.strangehorticulture.com. Accessed 1 Dec. 2023.

5 The Legend of Zelda: Breath of the Wild. https://zelda.nintendo.com/breath-of-the-wild. Accessed 1 Dec. 2023.

6 As Bennett attests, "human-plant affinity abounds once you become alert to them, and then there's a slight but real kaleidoscopic shift in everything you see, hear, smell, touch, taste, and think" (*Vegetal Life and Onto-Sympathy* 103).

7 *Herbaria 3.0*. https://herbaria3.org. Accessed 12 Oct. 2023.

8 *JSTOR Plant of the Month*. https://daily.jstor.org/series/plant-of-the-month. Accessed 12 Oct. 2023.

9 Center for Plants and Culture. www.plantsandculture.org. Accessed 12 Oct. 2023.

10 Plant Humanities Lab, Dumbarton Oaks and JSTOR Labs. https://lab.plant-humanities.org. Accessed 12 Oct. 2023.

11 Juncture by JSTOR Labs. https://labs.jstor.org/projects/juncture. Accessed 1 Dec. 2023.

12 Alfred Crosby coined the term "ecological imperialism" in 1968 to describe the movement of plants that coincided with European colonization in North America and the Global South. For more information see Alfred W. Crosby. *Ecological Imperialism. The Biological Expansion of Europe, 900–1900*. Cambridge: Cambridge UP, 2015. Print.

13 With a focus on the *Rubiaceae* (coffee) family, Figueiredo and Smith found that although a large amount of Rubiaceae genera can be found within Angola, the majority of Rubiaceae collected in Angola are deposited in European herbaria. This disparity highlights the lingering effects of colonization while underscoring the problem of scholars being unable to access their own botanical history.

14 The Welikia Project. https://welikia.org. Accessed 12 Oct. 2023.

15 *Walden, a game*. www.waldengame.com. Accessed 12 Oct. 2023.

16 The Alpine Garden MisGuide. https://greeningnarrative.wordpress.com/home/projects/alpine-garden-misguide. Accessed 12 Oct. 2023.

17 iNaturalist. www.inaturalist.org. Accessed 12 Oct. 2023.

18 A witness tree. https://twitter.com/awitnesstree. Accessed 12 Oct. 2023.

19 A Kinder World. www.playkinderworld.com. Accessed 12 Oct. 2023.

20 Botanical Botticelli Quiz. https://artsandculture.google.com/story/lQXhy_28Liuodw. Accessed 12 Oct. 2023.

21 Urban Forest Visual, City of Melbourne. http://melbourneurbanforestvisual.com.au. Accessed 12 Oct. 2023.

22 For example, New York City undertakes a street tree census every 10 years and uses the data for a variety of projects, including interactive maps. https://tree-map.nycgovparks.org. Accessed 12 Oct. 2023.

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Searching for Latent River Cultures in English-Language Literature Using Word Embeddings

Dez Miller

ABSTRACT

Throughout the nineteenth and twentieth centuries in the United States and the United Kingdom, rivers and streams were piped, dammed, reversed, straightened, and dried-up, all in service of a growing demand for clean, reliable water in every household. This paper uses an interpretive distant reading methodology for asking how this dramatic change was reflected in English-language literature. As an imaginative space of reflection on culture and material life, how does literature accommodate and make sense of changes in environmental realities? Looking at the diachronic word embeddings surrounding the word "river" in the Novel TM corpus housed within HathiTrust Digital Library, this study identifies a number of trends over time in the shifting semantic fields surrounding "river." It argues that these results indicate a possibly less intimate conceptualization of rivers over time, one more defined by rivers' geographic attributes than by their ecologies and specific natures. (DM)

KEYWORDS: rivers, word embeddings, cultural analytics, computational text analysis, gensim, nlp

Over the course of the nineteenth and twentieth centuries, a process was underway that would result in a drastically different relationship between human beings and the substance most intimately connected to life: water. In many industrialized nations around the world, rivers, creeks, springs, and streams would be systematically piped, dammed, reversed, straightened, and dried up in service of a growing demand for reliable, clean water on demand in every household. After many millennia of daily interaction with naturally occurring water flows, most human beings in urban environments of the US and the UK would come to interact with water primarily mediated through a tap, faucet, or showerhead. Increasingly, with the growth of cities and then subsequent chemical pollution, natural water flows that remained would become highly polluted.

In this paper, I explore an interpretive distant reading methodology for asking how this change in human water cultures was reflected in English-language literature. As an imaginative space of reflection on culture and material life, how does literature accommodate and make sense of changes in environmental realities? By analyzing diachronic word embeddings in the Novel TM corpus housed within Hathi Trust Digital Library, I offer a generalized, randomly sampled portrait of how English-language literature created different semantic fields around rivers over time. This study focuses on the word "river" for several reasons: 1) It appears in the vast majority of novels in the corpus, between 442 and 2749 times per decade-corpus (see Figure 1). 2) It lacks the multivalence of a word like "stream," which can be a verb. 3) Rivers are and have historically been repositories for cultural values and power dynamics. 4) Rivers have served as water sources for a huge number of cities, and they have been the object of extreme measures of control, pollution, and extraction as city populations have grown exponentially over these last two centuries.

Background

In order to know what to look for in literary landscapes, it is useful to understand the infrastructural realities that underpinned cultural meanings of rivers. Starting in the 1800s, most American rivers were just beginning to be employed for water infrastructure, with early waterworks just starting out in the most advanced northeastern cities (Melosi 19). In cities like London, on the other hand, waterwheels were established as early as 1581 (Broich 2). By the 1800s, however, both cities in the UK and the USA were facing similar problems: with the exponential growth of cities, and an increase in waterborne diseases, a demand for more sanitary cities was growing (Melosi 12). So began the more large-scale infrastructure projects, which would fastidiously bury most streams and creeks in urban environments into sewers underground.

Major cities in the US and the UK took slightly different tactics for controlling water flow depending on their geography, social realities, and eras in which they undertook these projects. Early waterworks in northern US cities usually relied on steam engines and wooden pipes to pump water from the closest rivers available. These projects were similar to the ones that would be untaken eventually by southern US cities almost a century later (Pierce). Initial waterworks were largely unfiltered until basic sand or gravel filters began to gain popularity. As cities grew, rivers and lakes quickly became polluted as street runoff and sewage ran directly into the same

sources where water was drawn from. Until the twentieth century, it was little understood what exactly made a water source safe to drink. Martin V. Melosi notes a telling piece of guidance from the president of the New York Board of Health in 1873: [A]lthough rivers are the great natural sewers, and receive the drainage of towns and cities, the natural process of purification, in most cases, destroys the offensive bodies derived from sewage, and renders them harmless (57). As an understanding of water-borne illness slowly dawned, sewers and more advanced freshwater pumping systems were built to a greater and more ambitious extent. In the USA, the number of waterworks went from 244 in 1870 to 9,850 in 1924 (Melosi 82). Along with this came more ambitious waterworks—canals, dams, and aqueducts—to help source water from more abundant flows, farther away from where sewage was sent into the river. Throughout the Great Depression and beyond, huge public works projects would reshape rivers and redefine their ecologies. One such example was the Columbia River, the extensive damming of which would nearly decimate the salmon run, as famously elucidated in Richard White's *The Organic Machine*. These public works and modern water systems, as is apparent in the 1941 Woody Guthrie's *Columbia River Songs*, were often culturally coded as symbols for Western man's dominance over nature (Bonneville Power Administration).

With underground sewage systems came the beginning of the end for natural streams and creeks in the heart of downtowns. As cities were paved, these smaller water flows were controlled to an even greater extent, and stormwater became an increasing issue. Perhaps nowhere was stormwater a greater issue than in Los Angeles, with the fickle Los Angeles River, which ran sometimes in a rush and other times dry, and which altered its route with every storm. The river, which allowed for the founding of the city, would become a menace to the expensive new real estate, flooding the city in 1914, 1934, and 1938 before miles of concrete canal were laid, to straighten it out and make it more predictable (Gumprecht 3). In other cities, the control of water meant dredging marshes. In *Cities and Wetlands*, Rob Giblett profiles a number of cities built on wetlands, which were then drained. He argues that these wetlands remain sites of repression for city identities themselves, as well as sources for metaphors that continue on in a city's life-long past the "end" of the wetland.

Outside of water infrastructure, what role did rivers play in cultural narratives? And why should it matter? As Tracy Scott McMillin explains in his book *The Meaning of Rivers: Flow and Reflection in American Literature*

> What rivers have meant can help us think about what rivers do mean and perhaps what rivers might mean. . . . Many scientists, including Luna Leopold, believe that the people of the United States "have acquiesced to the destruction and degradation of our rivers, in part because we have insufficient knowledge of the characteristics of rivers and the effects of our actions that alter their form and process." (xviii)

Part of that insufficient knowledge, I argue, comes from a marked decrease in intimacy with rivers, creeks, and streams, due to the control of water for infrastructure. Another aspect of this lack of intimacy has to do with the kinds of stories we tell about rivers and river flows. McMillin divides river stories into being defined by their distance to the "river's energy." They position themselves as either 1) "overlooking the river"; 2) being "by the river"; 3) going against the flow, or "up the river"; 4) going with the flow, or "down the river"; 5) crossing the river; or 6) going "up and down the river." Many of McMillin's categories speak to rivers' roles in travel and transportation. Upriver trips were facilitated significantly by the invention of steamboats throughout the nineteenth century before ultimately being supplanted by train travel (Burton et al.). While travel still occurs on rivers in the US, it is frequently more in the form of shipping barges than human transportation. Given that change, it is worth wondering whether rivers are still associated with travel in the cultural imagination, and if the kinds of travel rivers are associated with mirror historical realities.

This essay deviates from other research like McMillin's in that it is interested in narratives that are not explicitly "river stories," but cultural products that contain rivers as setting, background, or marginal elements. In the aggregate, how are rivers coded semantically? That is, what are they associated with, and how, like the wetlands in *Cities and Wetlands*, might they show up as marginal, polluted, repressed, or with an emphasis on their unimportance? This research also responds to calls within more materially minded ecocriticism to "think with water" as a way to reveal formerly ignored locations of power, modes of response, or methods of relation (Chen et al.).

Finally, ever since the activism leading up to the 1972 Clean Water Act in the United States, there has been a growing movement to clean up rivers, as profiled in Paul Stanton Kibel's *Rivertown: Rethinking Urban Waters* and other books. Therefore, another research question was how this return of attention to the ecology of rivers might show up in the stories we tell about them over the last few decades?

Corpus selection and research questions

Because of copyright restrictions, legally employing digital humanities text mining methods on most twentieth and twenty-first-century novels is mainly possible through the HathiTrust Digital Library. This Library contains over seventeen million volumes, digitized by partnering library collections (Underwood et al.). While 3.2 million of these volumes are public domain, HathiTrust also makes available its full-text volumes for "non-consumptive research" (HathiTrust) including text mining through their Data Capsule, a secure, virtual computing environment. For this project, I used Ted Underwood et al.'s curated dataset, which is one of HathiTrust's "Recommended Worksets," entitled "NovelTM Datasets for English-Language Fiction: Manually Checked Subset." This collection is a 2,730-volume randomized subset of a larger 210,776-volume list, which was identified as fiction "by trawling, predictive models" (12). The NovelTM subset was then manually checked by Underwood et al. to make sure that each title was indeed fiction and had accurate metadata attached.

Volumes between 1800 and 2009 were selected in order to capture the period in which water infrastructure developed most rapidly. I then divided the list by decade and built models for each decade within a HathiTrust Data Capsule. Each of these decade lists were around 130 volumes. It is worth mentioning that this is not meant to be a "representative" corpus of the past. Representativeness is something that computational literary scholars have hotly debated, and a random sample of a digital library that does not contain all titles cannot represent the totality of English-language fiction. There are other subsets of this NovelTM corpus that might have been chosen for this inquiry instead, including a subset of frequently reprinted titles, which some have argued better represent the past. The authors of the NovelTM corpus note that their compiling of the corpus goes against the recommendations of other digital humanists like Katherine Bode, who in *A World of Fiction,* recommends corpora in which the context of circulation can be well-understood.

For this reason, the following distant reading can be seen more as a roadmap for future inquiries in trying to understand how historical realities in river control have affected the roles of rivers in narratives. My overall research question, therefore, is whether or not it is possible to identify trends in the semantic fields of rivers even in a general corpus like the NovelTM subset I used. One of the purposes of this study, therefore, is to test out the usefulness of generalized corpora like the NovelTM Corpus for

identifying trends over time. I wanted to know whether it was possible to determine certain ways of talking about rivers that were possible in the 1800s, which, with the changes in historical realities, became impossible in the 2000s, or vice versa.

Methodology

Word2Vec is a Gensim word embedding algorithm that uses shallow, two-layer neural networks to place each word in a corpus within a vector space model. For digital humanists who use word embedding models, a word's particular connotative meaning can be represented by the words that the seed word is close to in vector space. These spatial relationships are determined by the context of a word across a particular corpus, as well as by the context of related words. This means, effectively, that even if "river" very rarely appears within the direct context of a particular word, for example "forest," it may still be considered by the Word2Vec algorithm to be highly semantically close to the word "forest" as long as another closely related word, for example "stream," appears frequently in the context of "forest."

The idea that a word is represented well by its context has been explored by language theorists of the past several centuries. Examples include the maxim attributed to John Rupert Firth, "you shall know a word by the company it keeps!," (Firth 11) and Jacques Derrida's refutation in *Of Grammatology* of the structuralist idea of the signified, arguing that behind every signifier is a chain of signifiers which constitutes the meaning of the word.

A common operator with Word2Vec is getting cosine similarity results between two words. These results are, theoretically, both physically closer in vector space and *semantically* closer in meaning. For this inquiry, I asked for the top twenty cosine similarity results for the word "river" in each decade-specific corpus. I then removed and identified the proper names from this list (Table 2) and kept the top ten similarity results (Table 1).

Parameters

Word2vec has a number of parameters, and these help to determine the kind of semantic results that are possible to glean. There is no one "correct" way to do Word2Vec, but different parameters offer different kinds of results. Below I detail the reasoning behind my choices for each of these parameters.

Window. The default window value for Word2Vec is 5, meaning that the context for a word is five words before and five words after. Generally, the guidance is that smaller context windows give similarity results wherein the similar words are *interchangeable*, whereas larger windows (15 or more) give results that are more highly *related* (Konstantinovskiy). This can be a somewhat perplexing spectrum, given that those two words—*interchangeable* and *related*—are not opposites. While multiple windows were tested, I chose a window of 25, given that that would represent approximately the previous and following sentence and a half in relation to a word. It allowed the model to get at some attributive qualities and highly related words that were particular for each corpus rather than producing interchangeable words that might be true for many corpora.

Skip-gram vs CBOW. Word2vec has two types of modeling: skip-gram and CBOW (Continuous Bag of Words). While CBOW trains by predicting a word from context words, skip-gram does the opposite: it predicts context words from a single input word. Skip-gram is known to perform better with a smaller dataset, which would describe the approximately 130-volume corpora I was working with.

Min-count. I chose the default minimum count of five, meaning that words that appear four or fewer times will be discarded from the training data before training occurs. The logic behind this default minimum count is that words that appear four or fewer times will not have very accurate or meaningful word vectors, since their context may be overly limited.

When using quantitative tools for literary analysis, it is important to recall that the tools were not necessarily designed for literary methods. In theory, setting a minimum count to 1 instead might be useful for literary analysis, because even if a word's context is overly skewed by a novel or passage in a novel, it might be a useful lens through which to do literary interpretation on that novel. For example, if I am studying a novel or group of novels that only uses the word "river" four times in total, similar words may not make a lot of sense as far as being interchangeable to "river." Let's say the word "lunch" is a similar word to "river" in that corpus. That would indicate a not very "accurate" model, given that "lunch" is not a semantically similar word to "river." However, the dissonance between those two words might invite a new research question: are people in this corpus eating lunch frequently by rivers? And if so, how are rivers being framed as a site of recreation? For this particular inquiry, however, it was more useful to glean general results than results determined by a novel or set of novels. Therefore, the minimum count chosen was 1.

Results

1800	1810	1820	1830	1840
banks	navigable	banks	banks	banks
rocky	coasted	slope	coasted	stream
declivity	serpentine	creek	stream	rivulet
moon-light	banks	meandered	lake	southeast
craggy	southerly	stream	dammed	rapids
tinkling	declivity	fordable	narrows	creek
woody	skirted	rivulet	widens	southerly
repassing	rivulet	streamlet	empties	water-gap
conies	creek	sloped	south-east	reconnoitering
moss-grown	bluff	footpath	rafts	valley
1850	1860	1870	1880	1890
stream	stream	banks	stream	banks
creek	*wooded*	stream	northerly	stream
widens	fordable	pebbly	*estuary*	foothills
ferried	banks	affluents	confluence	barges
banks	shallowed	hilly	tributary	rapids
rapids	foot-bridge	rivulet	barges	cascades
lake	precipitously	widens	boat-house	*wooded*
fording	gorge	wharves	cascades	rafts
islet	slopes	water	northward	inlet
bayou	creek	mountain	gravelly	*freshet*
1900	1910	1920	1930	1940
fording	stream	banks	tributary	northernmost
stream	sloped	stream	wooded	inlet
rapids	cut-off	confluence	down-stream	piers
headwaters	upland	tributaries	flows	weir
sweetgrass	tributaries	zigzagging	waterfall	navigable
banks	*cornfields*	fording	stream	ferries
coulées	narrows	creeks	sampan	bluffs
south-east	*grassy*	delta	cliffs	*marshy*
cañon (canyon)	bayou	gravelly	gorges	southward
tributary	promontory	shelving	uplands	gorges
1950	1960	1970	1980	1990
stream	*swampy*	forded	tributary	upstream
barges	downstream	down-stream	rapids	riffles
sampans	creek	lowlands	*wooded*	expressway
willows	upstream	traversing	creek	gorge
narrows	spanned	stream	banks	rapids
embankment	northeast	upstream	fishing	downstream
ferry-boat	banks	headland	stream	marshlands

2000
Tributary
Turbid
Banks
Upstream
Creeks
Waters
Stream

"By the River"
River as Boundary
Transportation
Navigation
Ecological Resonance
Directional/
Mapping

rivulet	lough (lake)	lakes	upstream	**bridge**	Downstream
creeks	westwards	banks	half-submerged	banks	Creeks
juts	stream	shallows	lagoon	***mangrove***	Silty

Table 1.
Top ten similarity results for "river," proper names excluded

1800	1810	1820	1830	1840
Wye (U.K.)	Baltic (northern, sea)	Aar (Switzerland)	Potomac (U.S.)	Saluda (U.S.)
Rhone (U.K.)	Dwina (Russia)	Mernene (fictional)	Landinsburgh (U.S., reservoir)	Champlain (Quebec)
Euphrates (Middle East)	Ob (Russia)	Mersey (U.K.)	Hadley (U.S., waterfall)	Gavarnie (France, village)
Loire (France)	Tagus (Spain)	Augustine-Bay (U.S., bay	Tahquamenon (North America, bay)	Saliko (U.S.)
Rhine (Germany)	Indus (Central Asia)	Neckar (Germany)	Trent (Ontario)	Portage (U.S.)
Tigris (Middle East		Kishon (Israel)	Saco (U.S.)	
		Slaney (Ireland)	Chaudière (Quebec)	
		Kei (South Africa)	Flesk (Ireland)	
		Manderra (fictional)	Fishkill (U.S., creek)	
		Tamar (U.K.)		
1850	**1860**	**1870**	**1880**	**1890**
Susquehanna (U.S.)	Rough (Ireland, possibly fictional)	Adur (U.K.)	Harlem (U.S.)	Lucerne (Switzerland, town)
Dee (U.K.)	Sarapiqui (Costa Rica)	Medway (U.K.)	Pend d'Oreilles (U.S.)	
Tiber (Italy)	Nightach (Ireland, possibly fictional)		Elbe (Germany)	
Seine (France)	Caftan (U.K., pool)			
Moskow (Norway, island)	Earmonth (U.K.)			
Neckar (Germany)	Grimsel (Switzerland, mountain pass)			
1900	**1910**	**1920**	**1930**	**1940**
Teton (U.S.)	Mississippi (U.S.)	Dordogne (France)	Braes (Jamaica)	Allegheny (U.S.)
Catawba (U.S.)	Missouri (U.S.)	Sauty (U.S.)	Bogongs (Australia, region)	Avon (U.K.)
Crois (U.S.)	Platte (U.S.)	Terek (Caucacus)	Taronga (Australia, park)	Cowford (U.S., fictional)
Rockies (U.S., mountains)		Vézère (France)		Rannals (U.S., fictional)
Pend (U.S.)		Tinto (Spain)		Paddock (U.K., town)
Meeker (U.S., town)		Avon (U.K.)		Canaan (U.S.)
Musselshell (U.S.)				Matanzas (U.S., inlet)
				Severn (U.S.)
				Haly (fictional)
				Tamplin (mountains, fictional)
1950	**1960**	**1970**	**1980**	**1990**
Erie (U.S., canal)	Abati (Tanzania)	Styx (mythical)	Thames (U.K.)	Varada (India)
Chenab (Central Asia)	Illawarra (Australia, region)	Suong (Laos)	Nile (Northeast Africa)	Portage (U.S.)
Guyas (ecuador)	Eisak (Italy)	Rhone (France)	Ganges (India)	Wandsboro (U.S., town)
Diz (fictional)	Arkansas (U.S.)	Louthe (fictional)	Ota (Japan)	Kalang (Wales)
Paducah (U.S.)	Struilitsa (Bulgaria)	Bori Khan (Thailand, city)	Ouse (U.K.)	Mekong (East Asia)
Tamiami (U.S., canal)	Chesapeake (U.S., bay)	Evoron (Russia, lake)	Mocobila (Honduras, fictional)	Meuk (Laos)
	Nid (U.K.)	Muang (Laos, city)		
2000				
Amaria (unclear, possibly fictional)				
Exe (U.K.)				
Koel (India)				
Vistula (Eastern Europe)				
Taff (Wales)				
Ganges (India)				
Thames (U.K.)				

Table 2.
Place names within top 20 similarity results by decade
Note: these are all river names unless otherwise noted

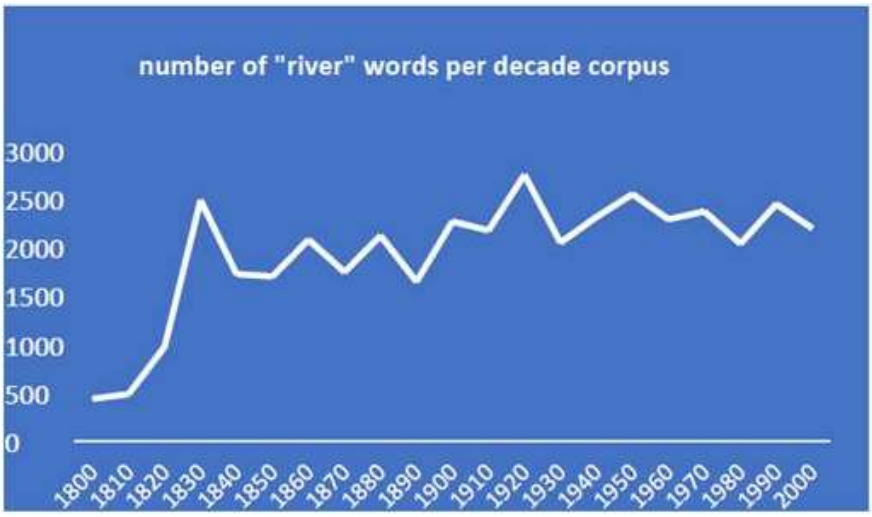

Figure 1.
Number of "river" words per decade corpus

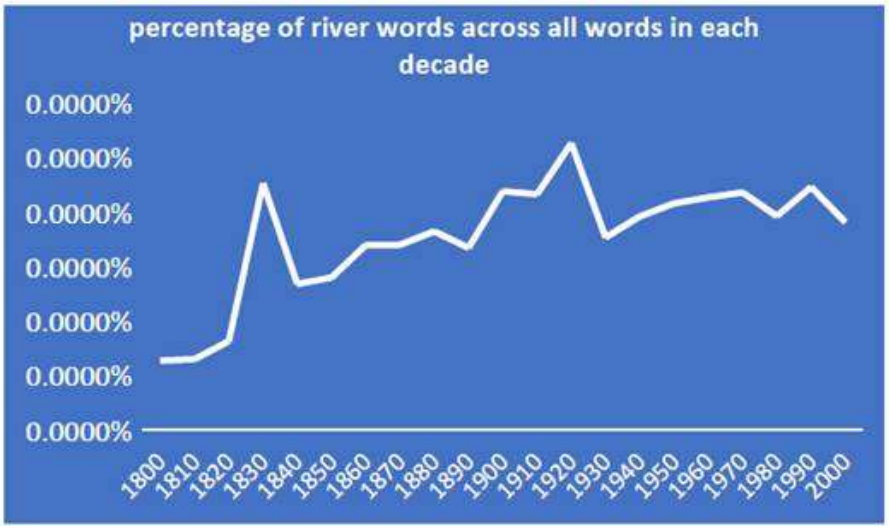

Figure 2.
Percentage of "river" words across all words in each decade corpus

Discussion and limitations

Several categories of words emerged from the results. Inspired by Tracy Scott McMillin's descriptions of river stories, "By the River," words, that is, words that could only come from direct observation of the river and

its surroundings, emerged as one category. (Note: I excluded very common results like "banks," which appeared in nearly every decade-corpus within the top 30 results). Perhaps the most significant finding was that noticeably more of these words appeared in the first half of the 1800s than in later decades, with seventeen words in the first half of the nineteenth century, and only six words in the latter half of the twentieth century. This might be indicative of a mimetic response to the reality discussed in the "Background" section of this paper, in which authors became less and less intimate over time with naturally occurring water flows due to the increasingly comprehensive water infrastructures, and so represented them directly less often in literature.

Words within this category like "moon-light," "tinkling," and "moss-grown" (1800s) each speak to an experiential closeness to the river, as well as, perhaps, a romantic relationship to the riverine environment. Other words within the "By the River" category include words that seem to describe the nature or shape of the river flow, like "serpentine" (1810), "meandered" (1820s), "narrows" (1830s), and "widens" (1870). A few words within this category described the specific nature of the river bottom, its banks, or surroundings: "pebbly" (1870s), "gravelly" (1880s and 1920s), and "silty" (2000s). "Silty" required further investigation, as silt pollution is a significant issue in North American rivers. However, upon looking at the novels in which this word appeared, it became clear that these were exclusively novels set on the Asian continent, which tends to have naturally siltier rivers even without pollution (Gordon).

This speaks to a shift in the geographical content of this dataset over time, which is also apparent in Table 2, showing place names that appeared in the Top 20 cosine similarity results. For the first hundred years of the dataset, almost exclusively American and Western European place names appear, with some Middle Eastern or fictional place names as well. By the mid-twentieth century, place names from Asia and Africa began to appear much more frequently, reflecting, perhaps, a general shift in what is catalogued as English-language fiction in different eras. It is worth underlining that these are not the only locations, or even rivers, that appear in the corpora. These are only the locations that the algorithm deemed to be significantly tied to the seed "river." Therefore, while this pattern may indicate an increase in English-language fiction that is not set in North America, the UK, or Europe, this is not sufficient evidence, and other methods, like Named Entity Recognition (NER), would be stronger tools

for investigating the question of how different geographical areas are represented in this dataset.

Again continuing with McMillin's categorizations of river meaning, a "River as Boundary" category emerged, which contained words that appeared to contextualize rivers as boundaries to be crossed. Many of these were related to fording rivers, as in the 1820s, 1860s, 1900s, 1920s, and 1970s decades. The "ferry"-related words, though coded as "transportation," could also be included in this category. The fact that by the last decades rivers no longer show up as to be contended with speaks to the level to which infrastructures all but eliminated in the human psyche this natural quality of rivers to contain or resist human movement.

There was a similar pattern to "Transportation/Navigation" words, which did not appear after the 1950s, and which seemed to mostly mirror transportation from their historical eras. The one transportation-related word that did appear after the 1950s was "expressway" (1990s), which speaks more to the experience, perhaps, of seeing rivers while traveling on expressways rather than relating to river-transportation itself. Words like "navigable" (1810s, 1940s) and "reconnoitering" (1840s) speak slightly more to a small or non-mechanized boat experience, whereas "ferried" (1850s), "ferry-boat" (1950s), and "barges" (1950s) connote larger-scale boats with engines. The word "sampan" appeared in the 1930s and "sampans" in the 1950s. A small Chinese or Malaysian boat, this might speak to the inclusion of colonial narratives, or perhaps the increase in narratives written in English and set on the Asian continent. I was surprised to find that sampan did appear quite a bit in these decades: twenty times across five different novels in the 1930s and sixty-eight times across six novels in the 1950s.

Words of the "Ecological Resonance" category also decreased slightly over time, but to a lesser extent than with the other categories. This category was defined as words that indicate some connection between rivers and other parts of the ecosystem. Therefore, words that related to trees, as appeared in the 1800s, 1860s, 1890s, 1930s, 1950s, 1980s, and 1990s, were noted. Additionally, words that related to sensitive ecological spaces were included in this category, like "estuary" (1880s) and "swampy" (1960s). There were also words that indicated a relationship between rivers to plant life, such as "moss-grown" (1800s), "sweetgrass" (1900s), and "cornfields" (1910s), as well as one animal word, "conies" (hyrax, 1800s).

The one category that showed a remarkably different pattern from the others was "Directional/Mapping." There were markedly more of these words in the latter half-century corpora than in earlier decade corpora.

These were words that seemed to refer to rivers as landmarks as a way to locate other places. These included cardinal directions, as well as words like "upstream" or "downstream." The frequency of "upstream," appearing five times in the latter five decades, and "downstream," appearing five times in the latter six decades, was surprising, and would be interesting to explore through future close reading. A research question for that close reading would be whether, in addition to being a directional indicator, it might reveal an anxiety about what water pollutants are up or downstream of a given location.

It is possible to read an unfortunate reduction in meaning of rivers over time in these results. While in the 1800s rivers' semantic fields were rich with references to particular ways of flowing, to plant and animal species, and to particular geologies, by the 1990s and 2000s, they are represented somewhat more generically. Beyond the categorizations I have laid out here, it is possible to read a general decrease in specificity over time. Have totalizing water infrastructures limited the meaning of rivers in the contemporary era to places on a map?

Altogether, these are preliminary results and might be best conceived as a guideline for future close readings. Digital work often works best in tandem with close reading, as has been elucidated by digital humanists like Andrew Piper and Richard Jean So, among others. In future work, I intend to perform close readings of several novels within this corpus in the post-45 period in order to gain a more nuanced context for what these patterns that I have identified might mean for a cultural analytic understanding of what rivers mean. What can be gleaned from this exploration is that Word2Vec is a useful heuristic tool for conceptualizing general resonances of rivers in different eras. In future digital ecological readings, it would be interesting to explore more geographically curated corpora to see whether material changes in human-river relations specific to particular locations can be tracked onto literary semantic imagination. It is also clear, however, that rivers have occupied, and continue to occupy, a significant space in fiction. Rivers not only showed up quite frequently in these novels, but both the number of mentions and percentage of "river" words across all words increased over time (see Figures 1 and 2). While this study may point toward a less intimate relationship with rivers being reflected in the cultural imagination over time, it does not point to them disappearing entirely from the zeitgeist. Additionally, while in some senses literature is mimetic of historical realities of the human-river relationship, resonances from earlier eras persist. This speaks to the particular role of

literature in culture, which may be either mimetic or a space in which reality is constructed.

Emery University, Atlanta, USA

Dez Miller is PhD Candidate in the Department of Comparative Literature at Emory University, Atlanta, USA.

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Measles Epidemics During the Edo Period: An Analysis Using *DANJURO Ver. 7.0*

James Harry Morris

ABSTRACT

Measles epidemics had a large influence on Japanese society during the Edo period (1600–1868). Spreading throughout the country periodically and particularly affecting young people, the disease had the power to drastically alter both rural and urban communities. This paper seeks to apply a mixed digital analysis to data garnered from religious membership registers (*Shūmon aratame-chō* 宗門改帳) taken from the *Edo jidai ni okeru jinkō bunseki shisutemu* 江戸時代における人口分析システム (*DANJURO ver. 7.0*) [Edo Period Population Analysis System (DANJURO ver. 7.0)] in order to determine what information these documents might hold pertaining to measles epidemics. Previous studies have suggested that these documents are only of limited use for studying epidemics since they do not feature information on the causes of deaths or on infant mortality. However, this paper illustrates that it is possible to garner insights about measles epidemics through data extracted from *shūmon aratame-chō*. In addition to this, the paper suggests that the data accessible through *DANJURO* can be used to challenge assumptions that measles outbreaks were not as significant as those of other diseases in terms of mortality and societal impact. Finally, the paper suggests that the ordering of information from *shūmon aratame-chō* in *DANJURO* acts to humanize those data. (JHM)

KEYWORDS: measles, epidemics, *shūmon aratame-chō*, demographics, environmental history

Introduction

Measles did not become endemic in Japan during the Edo period (1600–1868). Rather, the disease periodically reached Japan from overseas, causing large-scale epidemics approximately every twenty years, which tended to disproportionately affect young people. The extensive and diverse population records created during the Edo period have long been used by scholars to study demographics and the influence of epidemics in Japan.

Religious membership registers (*shūmon aratame-chō*宗門改帳), however, have traditionally been viewed as holding only limited utility for studying epidemics when compared to other population records. Nevertheless, this paper utilizes data from these records through the *Edo jidai ni okeru jinkō bunseki shisutemu* 江戸時代における人口分析システム (*DANJURO ver. 7.0*) [Edo Period Population Analysis System (DANJURO ver. 7.0)], exploring to what extent measles epidemics can be analyzed with recourse primarily to *shūmon aratame-chō* through using a mixed digital approach. I attempt to make three key points. First, that it is possible to garner insights about measles epidemics through data stored in and extracted from *shūmon aratame-chō*. Second, the data accessible through *DANJURO* call into question assumptions that measles outbreaks were not as significant as those of other diseases in terms of mortality and societal impact. Third, platforms such as *DANJURO* help to humanize the data contained in *shūmon aratame-chō*—something that is often missing in the digital humanities.

Measles epidemics in the Edo period

Measles epidemics were a fairly infrequent occurrence during the Edo period. Katsushika Roan's *Hashika hitsuyō* (麻疹必用) [Essential Knowledge on Measles] (1824) records eight epidemics in 1616, 1649, 1690–1691, 1708, 1730, 1753, 1776, and 1803, while the *Hashika ryūkō nensū* (麻疹流行年数) [The Years of Measles Epidemics] (1862) by Isshōsai Yoshimune (also known as Utagawa Yoshimune I, 1817–1880) also lists eight major epidemics in 1650 (1649 in other sources), 1690–1691, 1730, 1753, 1776, 1803, 1824, and 1862. Ann Bowman Jannetta provides a list of eleven major measles epidemics, which includes all those referred to in the aforementioned sources and an additional epidemic in 1836 (119). Noriko Suzuki, on the other hand, provides a slightly expanded list of thirteen with the addition of 1607 and 1670[1] (Suzuki "Edo jidai no mashin to iryō" [Measles and Medical Care in the Edo Period] 502). Elsewhere Suzuki includes another epidemic in 1646 bringing the total to fourteen (Suzuki *Edo no hayariyamai* [Epidemic Diseases in Edo] 2). Yū Fujikawa and Shizu Sakai list a total of thirteen but exclude the epidemic in 1670, in favor of one in 1782 (Fujikawa 130–35; Sakai 194–95), while Tasuku Yamazaki records twelve including the same change and excluding the 1607 epidemic (Yamazaki 387–91). In spite of these points of divergence and the possibility that measles outbreaks occurred more frequently, the evidence

contained in primary sources and the scholarly sources based thereon suggest a highly limited number of epidemics. Jannetta notes, for instance, "that a doctor would treat patients with measles only twice or, at most, three times during his lifetime" (126).[2] The occurrence and frequency of measles outbreaks can be better visualized in tabular format. As such, I have merged these divergent lists of epidemics in Table 1 producing a list of the "maximum" number of large-scale outbreaks.

Year	Month(s) of Outbreak (Approx.)	Interval
1607 (Keichō 慶長 12)	-	20
1616 (Genna 元和 2)	10th	9
1646 (Shōhō 正保 3)	5th	30
1649 (Keian 慶安 2)	3rd	3
1670 (Kanbun 寛文 10)	2nd	21
1690 (Genroku 元禄 3)〜1691 (Genroku 元禄 4)	3rd month of Genroku 3 to the 5th month of Genroku 4	20
1708 (Hōei 宝永 5)〜1709 (Hōei 宝永 6)	autumn of Hōei 5 to spring of Hōei 6	17
1730 (Kyōhō 享保 15)	summer to autumn, or winter of Kyōhō 15 to the spring of Kyōhō 16	21
1753 (Hōreki 宝暦 3)	4th month to 9th month	23
1776 (Anei 安永 5)	3rd month to autumn	23
1782 (Tenmei 天明 2)	5th	6
1803 (Kyōwa 享和 3)	3rd month to 6th month	21
1823 (Bunsei 文政 6)〜1824 (Bunsei 文政 7)	11th month of Bunsei 6 to 3rd month of Bunsei 7	20
1836 (Tenpō 天保 7)	summer to autumn	12
1862 (Bunkyū 文久 2)	4th month to autumn	26

Table 1:
Occurrences of measles epidemics during the Edo period.
Created by the author on the basis of data adapted from Jannetta (119); Sakai (194–95); Suzuki ("Edo jidai no mashin to iryō" 502; *Edo no hayariyamai* 2).

According to the data in Table 1, the mean average interval between measles epidemics was approximately 18.13 years with a bimodal average of

20 and 21 years. The longest interval was 30 years and the shortest 3. Jannetta's study, which, as noted, focuses on 11 major measles epidemics, records a similar mean average interval of 21.09 years (118). In other words, whether we accept liberal or conservative estimates we can observe that major measles epidemics were a bi-decadal occurrence. This was partially due to Japan's strict foreign policy measures and controls on international trade, and her existence as a series of islands (Suzuki *Kinsei kansenshō no seikatsushi* [The Life Cycle of Early Modern Infectious Diseases] 140). During an epidemic people would gain herd immunity, but once this had fallen after a period of approximately twenty years the disease would again spread through the country, particularly affecting young people who had no immunity to the disease due to not having lived through the previous epidemic (Suzuki *Kinsei kansenshō no seikatsushi* 140). Jannetta describes the epidemiology of the disease as follows:

> [M]easles would traverse the country, usually within the span of a single calendar year, and it would travel along the same general route. Detailed accounts of the measles epidemic of 1862 tell of its arrival on a foreign ship and of its progress northward from Nagasaki to the major population centers of central Japan. Such detailed accounts are rare for earlier epidemics, but when accounts from different parts of the country are pieced together, it is clear that the Tokugawa measles epidemics advanced in a north-easterly direction from Kyushu. The evidence is virtually overwhelming that measles remained an imported disease until the end of the Tokugawa period. (125)

The disease would enter from China or Korea through the port of Nagasaki, and during the second half of the nineteenth century through intercourse with European and North American powers (Suzuki *Kinsei kansenshō no seikatsushi* 140; Park 200–02).

Some measles outbreaks were severe. Matsuda Takeshi records that during the 1862 measles outbreak that in Senshū (泉州), Izumi-gun (泉郡), Minamiōji-mura (南王子村), and modern-day Izumi (和泉) city, 63.3% of the population were infected by the disease (31). Young people were disproportionally affected with 89.29% of the population under the age of 30 becoming infected in comparison to only 9.3% of the population over the age of 30 (Matsuda 31). The mortality rate was 5.4% and the case fatality rate 8.5% (Matsuda 32). Figures like these were not unusual. Elsewhere I noted that the *Edo shichū hashika byōnin chōsho*

(江戸市中麻疹病人調書) [A Survey of People Afflicted by Measles in Edo] indicates that during the 1862 epidemic there was a case fatality rate of 12.71% in the capital city of Edo, which might equate to a mortality rate of between 3.66% and 7.33% depending on how we calculate the population of the city (Morris Web). Similarly, Suzuki records case fatality rates of 3.5% in Tatsuno domain (modern-day Hyōgo prefecture), 4.7–5.7% in Edo, and 6.9% in Tonami-gun (modern-day Toyama prefecture) (Suzuki *Edo no hayariyamai* 6–7). Nevertheless, in spite of high levels of infectivity, not all outbreaks resulted in a large number of deaths. The records from villages in Hida (飛騨) between 1771 and 1852 used in Jannetta's study suggest that

> measles had little impact on mortality . . .. In fact, during the eighty-two-year period during which causes of death were entered into the temple records, only thirty-four deaths were attributed to measles. Measles deaths accounted for only .004 percent of all deaths. (139)

Yamazaki also records low mortality rates associated with some outbreaks noting, for example, the 1708 and 1803 epidemics (387–89). He argues that because of these low mortality rates the disease had less overall influence than other illnesses prevalent in the Edo period (Yamazaki 394). Given all this it should be clear that the mortality rate varied according to outbreak, location, and other contextual factors such as levels of immunity, the prevalence of other diseases or disasters, weather, the health and socio-economic circumstances of a given community, and the responses of local and national governments.

A digital approach to traditional sources

A number of studies focusing on measles epidemics during the Edo period have engaged with data from historical population records. Matsuda, for instance, used the *Byōsai kakiagechō* (病災書上帳) [Ledger of Illness] (1862) from Minamiōji-mura. Jannetta, on the other hand, makes use of temple death registers (*kako-chō* 過去帳) from Sendai (仙台) domain and Hida. Namikawa Kenji used records related to religious membership entitled the *Goryōbun-chū shūshi aratame ninsū mokuroku* (御領分中宗旨改人数目録) [Catalog of the Number of People listed in Religious Membership Registers in the Domain] compiled by retainers of Morioka (盛岡) domain (23–29). The digitization of data from population

records provides the potential to adopt new approaches including the ability to interact with these documents on a larger scale. Depending on the availability of data the researcher may, for example, be able to compare trends from different villages quickly and easily across time. As such, a sort of "distant reading" that favors the identification and analysis of over-arching demographic trends rather than a "close reading" of individual documents might provide a pertinent method for handling digitized population records. *DANJURO* is a platform developed by Kawaguchi Hiroshi which allows the user to quickly access and analyze data from its collection of *shūmon aratame-chō*. Originally developed in the late 1980s, the platform, which is now in its seventh version, has been explored in a number of papers by its creator and his collaborators[3] and has been used to analyze demographic information such as family structure and the average age of first marriage (Kawaguchi "'Edo jidai ni okeru jinkō bunseki shisutemu (DANJURO ver. 2.0)' no kōchiku unyō riyō" 21–24). The data can be freely searched and have also been sorted and organized for analysis according to different themes.

At the time of writing, *DANJURO* allows users to access 8 sets of data from 7 villages—3 villages from Mutsu-no-kuni (陸奥国), Aizu-gun (会津郡), namely Ishibushi-mura (石伏村) (modern-day Tadami-machi (只見町)), Tōnosu-mura (鴇巣村) (modern-day Minamiaizu-machi (南会津町)), and Komatsukawa-mura (小松川村), (modern-day Shimogō-machi (下郷町), Aikawa (合川)); two sets of data from Mutsu-no-kuni (陸奥国), Ōnuma-gun (大沼郡), Kuwabara-mura (桑原村), (modern-day Mishima-machi (三島町)); one set from Musashi-no-kuni (武蔵国), Tama-gun (多摩郡), Nakatō-mura (中藤村) (modern-day Musashimurayama-shi (武蔵村山市)); one set from Settsu-no-kuni (摂津国), Muko-gun (武庫郡), Kami-Kawarabayashi-mura (上瓦林村) (modern-day Nishinomiya (西宮市) city, Kawarabayashi-chō (瓦林町)); and one set from Settsu-no-kuni (摂津国), Yatabe-gun (八部郡,) Hanaguma-mura (花熊村) (modern-day Kōbe (神戸), Chūō-ku (中央区), Hanakuma-chō (花隈町)). The extent of the data also varies according to village—the data for Ishibushi extend from 1752–1812, Tōnosu from 1790–1859, Komatsukawa from 1792–1868, Kuwabara from 1750–1834 and 1840–1858, Nakatō from 1843–1864, Kami-Kawarabayashi from 1750–1819, and Hanakuma from 1789–1869. In other words, the data allow the user to compare demographic trends across three parts of the country during the latter

second half of the eighteenth century and the first half of the nineteenth century. Here I will attempt to see what details we can garner about measles epidemics from the data that the platform contains. Sorted data were accessed from *DANJURO* ver. 7.0 in September and October 2023, with analyses and calculations performed by the author.

As noted, *shūmon aratame-chō* are, effectively, a population register. They were collected on a yearly basis by village leaders or local officials originally with the intention of recording religious membership, but also evolved to include numerous pieces of demographic information such as the names, ages, relationships, births, and deaths of those in a family (see exploration in Morris 418–20; Tamamuro 261–65). While Fumio Tamamuro records that the system was standardized in 1671 (Tamamuro 262), *shūmon aratame-chō* and methods of compiling them were in fact diverse. Tamamuro provides an example of a register produced according to a sample format distributed by the *bakufu's* [Shogunate] intendants (*daikan* 代官) which includes data on a person's name, age, sect, temple affiliation, home, birthplace, familial relationships, and enumeration of each family's data (263–64). Conversely, a *Nezumidoshi shūmon aratame-chō* (子歳宗門改帳) [Religious Membership Register from the Year of the Rat] collected in Hitachi-no-kuni (常陸国), Tsukuba-gun (筑波郡), Kamisugama-mura (上菅間村) (modern-day Tsukuba-shi (つくば市) in 1864 from my personal collection includes no information on home or birthplace. Some of the *shūmon aratame-chō* included in *DANJURO* includes additional information. For example, the *shūmon aratame-chō* from Aizu-gun include information on the number of horses owned by a family, the size of land holdings and the family's home, and the materials used to construct said home's roof, while those from Kami-Kawarabayashi include extensive details about people's roles and statuses. The practices of collecting *shūmon aratame-chō* also varied depending on locality. In Tsu (津) domain the registers were collected every four years, while in the neighboring Kī (紀伊) domain they were collected every six years and only included those over the age of eight (Fukaya 115; Matsuo 514, 516–17; Mie-ken 557; Morris and Dulina 20). Therefore, although it is difficult to assume uniformity between *shūmon aratame-chō* from different regions or to postulate a homogenous *shūmon aratame* [inquiry into religious membership or religious inquisition], these documents invariably hold valuable demographic information.

Susan B. Hanley outlines the importance of *shūmon aratame-chō* for demographic studies noting that they can be used to compile statistics on

"average age at marriage, average number of children raised, average age at first and last childbirth (of children who lived past early infancy), average family size, the age composition of the population, the incidence of migration" (516). Nevertheless, *shūmon aratame-chō* also have a number of limitations. Jannetta argues that

> they are not the best records to use for research on epidemics and mortality. Not only is it difficult to detect short-term changes in mortality that marked the passage of an epidemic, but it is also impossible to analyse changes in seasonal or age patterns of mortality that provide clues to the kinds of epidemics that caused a rise in mortality. (Janetta 36)

Furthermore, unlike the temple death registers used by Jannetta, *shūmon aratame-chō* do not usually note the cause of death. This means that even if the *shūmon aratame-chō* record deaths in epidemic years, the scholar cannot be certain if these were caused by the epidemic or something else. Another issue is the registration of children. As noted above, in Kī domain only children above the age of 8 were included in the registers. In most places, however, "it was common to register children only after they reached the second or third year of life" (Hanley 518 n. 9). In *DANJURO*'s data the majority of births are recorded at the age of two (one by European counting methods), with only one birth (of 384) recorded at the age of one from Tōnosu, 12 (of 155) from Komatsukawa, 14 (of 166) from Kuwabara, two (of 103) from Nakatō, 17 (of 535) from Kami-Kawarabayashi, and 18 (of 480) from Hanakuma. Births were also recorded at the age of three, including eight in Nakatō, one in Kami-Kawarabayashi, and two in Hanakuma. Infants who died before their birth was registered were not included in the registers. Jannetta notes that the lack of records for infants in their first few years of life "leads to a serious underestimation of both fertility and mortality" (36). Although there are difficulties using *shūmon aratame-chō* for epidemic studies, the analysis included here shows that they still potentially hold useful information.

The first thing that can be garnered from the data is that years with measles epidemics had on average a higher incidence of deaths than the average year (Table 2). This is, of course, intuitive. In some cases, the increase in the average incidence of deaths is quite large. In Ishibushi, for example, the average number of deaths over the four measles epidemic years found in the data was more than double that of the average year. The villages in Mutsu-no-kuni, Aizu-gun saw a greater increase in the average

number of deaths during years with measles epidemic than other localities included in the data, potentially suggesting that the experience of measles epidemics was more severe there. The only outlier is Nakatō, which records zero deaths in the single epidemic covered in the data—the 1862 measles epidemic. This is quite unexpected since the 1862 measles epidemic is known for its severity (Jannetta 124–25). At present, I am unable to explain why there are no recorded deaths in 1862. The data for Nakatō from the following year (1863) record a much higher number of 10 deaths. These may have been related to the cholera epidemic that year (Jannetta 49). In any case, the data for all other villages indicate that there was an excess average number of deaths in years with measles epidemics.

Village	Extent of data (Years)	Average no. of deaths (per annum)	Average no. of deaths (per measles epidemic year)	Percentage increase
Ishibushi	1752–1812	2.96	6	102.70
Tōnosu	1790–1859	4.37	7.75	77.35
Komatsukawa	1792–1868	1.47	2.4	63.27
Kuwabara	1750–1834 1840–1858	2.13	2.33	9.39
Nakatō	1843–1864	5.32	0	-100.00
Kami-Kawarabayashi	1750–1819	6.17	9	45.87
Hanakuma	1789–1869	6.63	8.4	26.70

Table 2:
Average number of deaths. Compiled by the author.

The crude mortality rate (per 1000 people) was also higher on average during years with measles epidemics. Table 3 displays the crude mortality rates for each village during measles outbreaks highlighting in bold those crude mortality rates that were higher than the average year. All the villages apart from Kuwabara and Nakatō recorded higher crude death rates on average in years with measles epidemics. If we assume that the above noted excess deaths and the related increase in crude mortality rates were likely to have been caused by the measles epidemics either directly or

indirectly,[4] it is also possible to estimate which epidemics affected each area most severely. For example, the epidemic years of 1803 and 1824 show higher than average crude mortality rates across each village (excluding Komatsukawa in 1803), suggesting that these epidemics were severe in these areas and potentially across the country. It is also interesting to observe that while Komatsukawa had higher crude mortality rates for both 1823 and 1824, other villages only appear to have felt the effects of the 1823–1824 epidemic in 1824 since their crude mortality rates for 1823 were lower than the yearly average. For the year of 1776, on the other hand, we can see that the epidemic (or other contemporaneous factors) did not have a great effect in Kuwabara or Kami-Kawarabayashi, but did influence the crude mortality rate in Ishibushi.

Year	**Ishibushi**	**Tōnosu**	**Komatsukawa**	**Kuwabara**	**Nakatō**	**Kami-Kawarabayashi**	**Hanakuma**
1753	10.15	N/A	N/A	0	N/A	**40.29**	N/A
1776	**48.08**	N/A	N/A	19.42	N/A	22.44	N/A
1782	**29.27**	N/A	N/A	10	N/A	17.01	N/A
1803	**33.9**	**38.91**	9.62	**25**	N/A	**60.61**	**47.27**
1823	N/A	16.67	**23.26**	8.85	N/A	N/A	21.82
1824	N/A	**49.38**	**48.19**	**25.86**	N/A	N/A	**40.29**
1836	N/A	**19.23**	11.76	N/A	N/A	N/A	**28.46**
1862	N/A	N/A	**42.55**	N/A	0	N/A	20.66
Average (measles epidemic years)	30.5	40	26.55	18.12	0	34.53	32.04
Average (every year)	15.19	16.85	16.11	19.59	9.67	23.98	25.9

Table 3:
Differences in average crude mortality rates. Compiled by the author.

Since I have observed that there were an excess average number of deaths and an excess crude mortality rate during years with measles epidemics, it is worth calculating excess deaths for each epidemic year. Excess deaths are calculated as follows:

Excess Deaths = *Reported Deaths* – *Expected Deaths* (Giattino et al. Web).

In order to calculate the number of expected deaths the mean average number of deaths in the ten years preceding the start of the outbreak was calculated. As such, excess deaths could not be calculated for the 1753 outbreak since there are insufficient data to calculate the number of expected deaths. The data show small increases in excess deaths during several epidemic years. In Ishibushi, the 1776 epidemic shows a particularly large number of excess deaths (7.9) and in Tōnosu there were large numbers in 1803 (7.1) and 1824 (7.1). In all, eight data points (32%) show a mortality deficit, 15 (60%) show an excess number of deaths, and two data points (8%) show neither excess nor deficit. Higher average numbers of deaths, increased crude mortality rates, and excess deaths all suggest that the influence of these measles epidemics is at least partially reflected in the data.

Year	Ishibushi (no. of deaths)			Kuwabara (no. of deaths)			Kami-Kawarabayashi (no. of deaths)		
	Reported deaths	Expected deaths	Excess deaths	Reported deaths	Expected deaths	Excess deaths	Reported deaths	Expected deaths	Excess deaths
1776	10	2.1	7.9	2	1.6	0.4	7	6.2	0.8
1782	6	3.5	2.5	1	1.6	-0.6	5	7.8	-2.8
1803	6	2.4	3.6	3	1.8	1.2	9	6.3	2.7
1823	N/A	N/A	N/A	1	2.6	-1.6	N/A	N/A	N/A
1824	N/A	N/A	N/A	3	2.6	0.4	N/A	N/A	N/A

Year	Tōnosu (no. of deaths)			Komatsuka-wa (no. of deaths)			Hanakuma (no. of deaths)		
	Reported deaths	Excepted deaths	Excess deaths	Reported deaths	Expected deaths	Excess deaths	Reported deaths	Expected deaths	Excess deaths
1803	10	2.9	7.1	1	1.4	-0.4	13	9	4
1823	4	4.9	-0.9	2	1.6	0.4	6	6	0
1824	12	4.9	7.1	4	1.6	2.4	11	6	5
1836	5	5	0	1	2	-1	7	7.7	-0.7
1862	N/A	N/A	N/A	4	1.4	2.6	5	6.8	-1.8

Table 4:
Excess deaths. Compiled by the author.

Comparing the number of average deaths from years with other epidemics to those during measles epidemics (Table 5) suggests that measles outbreaks were more severe and potentially more significant than Jannetta and Yamazaki suggest. In Ishibushi, Tōnosu, Kami-Kawarabayashi, and Hanakuma, years with measles epidemics had on average a higher number

of deaths than years when these villages were afflicted by other epidemics. In Ishibushi and Tōnosu, influenza epidemics also appear to have caused significant increases in the average number of deaths, whereas in Kami-Kawarabayashi and Hanakuma dysentery also played a major role. In Komatsukawa, years with cholera epidemics saw the largest increase in average deaths followed by years with measles epidemics. In Kuwabara, years with influenza and unidentified epidemics saw the largest increases. Finally, in Nakatō years with influenza epidemics saw the largest increase. While it, therefore, appears that measles caused more deaths per outbreak in Ishibushi, Tōnosu, Kami-Kawarabayashi, and Hanakuma than other epidemics, it is unclear whether these differences (which accounting for population size are rather small) would have been felt by the individual populations especially when considering the infrequency of measles epidemics. In a community of a few hundred people does a person really feel a difference between three deaths and six deaths? I imagine that it would not be significant enough for people to take note of. Rather, observing the spread of the diseases and their visual symptoms would have likely been key in the lives of ordinary people.

Village	Average deaths (per annum)	Average deaths (per measles epidemic year)	Average deaths (per cholera epidemic)	Average deaths (per dysentery epidemic)	Average deaths (per influenza epidemic)	Average deaths (per rubella epidemic)	Average deaths (per smallpox epidemic)	Average deaths (per unidentified epidemic)
Ishibushi	2.96	6	N/A	3	5.33	3	2	2.75
Tōnosu	4.37	7.75	4.67	3.4	6.21	5	4	4.4
Komatsukawa	1.47	2.4	2.8	1.4	1.82	0	1.5	1.17
Kuwabara	2.13	2.33	2	2	2.56	1	1	2.5
Nakatō	5.32	0	3.75	N/A	6.75	N/A	N/A	3.33
Kami-Kawaraba-yashi	6.17	9	N/A	8.3	6.4	3	5	6.2
Hanakuma	6.63	8.4	5.4	7.2	6.69	2	8	7.8

Table 5:
Average deaths in different epidemic years. Compiled by the author.

A simple cumulative analysis of the number of deaths in epidemic years (Table 6) also appears to confirm the comparative severity of measles outbreaks. The data indicate that across each locality, years with influenza epidemics saw the most deaths. Of 1,962 deaths included in the data, 408 occurred during years with influenza epidemics accounting for 20.8% of the overall deaths. In comparison, years with measles epidemics saw a total of 150 deaths accounting for 7.65% of the overall deaths representing the second largest number of deaths during years with epidemics. Of course, influenza outbreaks were much more frequent than measles outbreaks with 20 epidemics occurring between 1750 and 1869 in comparison to eight measles epidemics. The data again indicate the severity of measles outbreaks in Aizu-gun where years with measles accounted for 67 of 595 deaths or 10.92%. The data also indicate that other diseases could have a cumulatively larger effect than measles. For example, in Komatsukawa more

overall deaths are recorded in years of cholera outbreaks than years of measles outbreaks, and in Kuwabara and Hanakuma years with unidentified epidemics accounted for more deaths. Sadly, since the *shūmon aratame-chō* do not include information on the cause of people's deaths, it is not possible to estimate with great accuracy how many deaths that occurred in these years were actually caused by the epidemics. Nevertheless, alongside the foregoing discussion this visualization of data helps to illustrate that *shūmon aratame-chō* potentially include information that point to the effects of epidemics.

Unidentified epidemic year deaths	11 (6.25%)	22 (7.19%)	7 (6.19%)	20 (8.93%)	10 (8.55%)	31 (6.37%)
Smallpox year deaths	2 (1.34%)	8 (2.61%)	3 (2.65%)	2 (0.89%)	0 (0%)	5 (1.03%)
Rubella year deaths	3 (1.7%)	5 (1.63%)	0 (0%)	1 (0.45%)	0 (0%)	3 (0.62%)
Influenza year deaths	48 (27.27%)	87 (28.43%)	29 (25.66%)	46 (20.54 %)	27 (23.08%)	64 (13.14%)
Dysentery year deaths	3 (1.7%)	17 (5.56%)	7 (6.19%)	10 (4.46%)	0 (0%)	25 (5.13%)
Cholera year deaths	0 (0%)	14 (4.58%)	14 (12.39%)	4 (1.79%)	15 (12.82%)	0 (0%)
Measles year deaths	24 (13.64%)	31 (10.13%)	12 (10.62%)	10 (4.46%)	0 (0%)	32 (6.57%)
Total number of deaths	176	306	113	224	117	487
Village	Ishibushi	Tōnosu	Komatsu-kawa	Kuwa-bara	Nakatō	Kami-Kawara-bayashi

Hana-kuma	539	41 (7.6%)	27 (5.01%)	36 (6.68%)	107 (19.85%)	2 (0.37%)	16 (2.97%)	47 (8.72%)
Totals	1962	150 (7.65%)	74 (3.77%)	98 (4.99%)	408 (20.8%)	14 (0.71%)	36 (1.83%)	117 (5.96%)

Table 6:
Number of deaths in epidemic years. Compiled by the author.

Although *shūmon aratame-chō* do not contain details of the cause of death or on the deaths of infants prior to the registration of their birth (usually at the age of two in the case of the documents used here), they do provide information that can help us to analyze mortality further. I will focus briefly on the villages of Ishibushi, Tōnosu, and Komatsukawa in Aizu-gun where measles epidemics appear to have had the greatest effect or severity. The average age of death in Ishibushi between 1752 and 1812 was 57.66, in Tōnosu between 1790 and 1859 it was 50.29, and in Komatsukawa between 1792 and 1868 it was 56.86. During years with measles the average age of death was slightly lower: 54.33 in Ishibushi, 44 in Tōnosu, and 50.25 in Komatsukawa. This is important since, as explored earlier in this paper, measles primarily affected people under the age of 30, and therefore, if measles was causing deaths amongst a population, we would expect to see increased deaths amongst the under 30s and related to this a lowering of the average age of death. Furthermore, the increase in the average number of deaths can be observed not only amongst the entire population (including those over the age of 31), but specifically amongst the under 30s (Table 7). For the under 30s the increase ranged from 1.57 to 1.75-fold, depending on the village. Considering the prevalence of overall excess deaths in these years, excess deaths amongst the under 30s, and the lower average age of death during years with measles outbreaks, we can confidently determine that measles-related deaths are captured within the data that can be extracted from these *shūmon aratame-chō*.

Year	Ishibushi (no. of deaths) over 31	under 30	Tōnosu (no. of deaths) over 31	under 30	Komatsukawa (no. of deaths) over 31	under 30
1753	2	0	N/A	N/A	N/A	N/A
1776	9	1	N/A	N/A	N/A	N/A
1782	4	2	N/A	N/A	N/A	N/A
1803	2	4	4	6	0	1
1823	N/A	N/A	4	0	2	0
1824	N/A	N/A	6	6	3	0
1836	N/A	N/A	3	2	1	0
1862	N/A	N/A	N/A	N/A	1	3
Average (epidemic years)	4.25	1.75	4.25	3.5	1.4	0.8
Average (all years)	2.25	0.68	3.03	1.34	1.16	0.29
Percentage increase	88.89%	157.35%	40.26%	161.19%	20.69%	175.86%

Table 7:
Deaths in different age groups. Compiled by the author.

Although there are limitations to using *shūmon aratame-chō* to explore epidemics, the data included in *DANJURO* can be used to show that in most of the villages there were excess deaths, an increased average number of deaths, and increased crude mortality rates during years with measles epidemics. By looking at the excess deaths amongst the under 30s it appears possible to affirm that at least some of the deaths recorded in *shūmon aratame-chō* were likely caused by measles. The data can also be used to make inferences about the difference in the severity of measles outbreaks in different localities. All this suggests that measles may have been more severe than has been observed in some secondary literature, although, as Yamazaki notes, the infrequency of measles epidemics may have meant that it had less influence on the general population than other epidemic diseases (394). Using *DANJURO* to explore measles epidemics, therefore, provides two challenges—a challenge to the assumption that *shūmon aratame-chō* do not contain valuable information related to epidemics and a challenge to the assumption that measles epidemics lacked severity.

Humanizing data

Shūmon aratame-chō provide opportunities not only to look at the macro-context of village demographics, but also to explore the lives of individuals. A "close reading" of *shūmon aratame-chō* is facilitated by *DANJURO*, which allows users to easily search for individuals and extract information about them and their families. This has the potential to humanize the data we work with and thus runs counter to the trends of datafication and the "distant reading" approach adopted in the first part of this paper, which risks dehumanizing our historical research subjects. By way of an example, I would like to briefly explore the background of one infant who died in a measles epidemic year. In 1803, a three-year-old girl named San (さん) (DANJURO Web, individual no. 261) died in Ishibushi. Her birth had been registered the previous year. San's father was born around 1774, and his birth was registered in 1775 when the family headed by his grandfather Sakuemon (作右衛門) consisted of 7 members (4 male and 3 female). His name was Tajirō (多次郎). Sakuemon died in 1781 at the age of 53, so Tajirō's 34-year-old father Chōemon (長右衛門) became the family's patriarch. In 1782, Tajirō's older sister Man (まん), formerly known as Yoshi (よし), aged 15, married and moved to the nearby Tadami village. The following year, Chōemon's grandfather died at the age of 80, and in 1784 his mother died at the age of 53 both potentially due to the effects of the Great Tenmei famine 1781–1789. Thus, in 1785, the once large household had only three members: Chōemon, his wife (unnamed in the documents), and their son Tajirō. The rendering of Tajirō's name changed several times in 1778: at the age of four the name Tajirō (多四郎) was adopted, and then in 1788 at the age of 14 he became Tajirō (太四郎). In 1794, Tajirō (19 years old) married a 17-year-old girl whose name and village of origin are not recorded in the documents, but who had clearly moved from another village, which can be deduced by the fact that she was not previously featured in any of the *shūmon aratame-chō* from Ishibushi. Chōemon died in 1799 at the age of 51, and Tajirō therefore took the family helm. At the same time, he changed his name to Zenbē (善兵衛) and then in 1801 he appears in the *shūmon aratame-chō* under another new name Zenzō (善蔵). Around the same time San was born.

During the second half of the eighteenth century, the family's fortunes appear to have taken a turn for the worse. When Sakuemon (formerly Matsutarō (松太郎)), an adopted son-in-law (*mukoyōshi* 婿養子),

took over the family in 1756, they held 6.128 *koku* (a measure of land value referring to how much rice could be produced), meaning that they were producing approximately enough rice to feed six adults per year. At that time, the family home measured 5 *ken* (a measure of length) by 3 *ken* or approximately 9 meters by 5.5 meters. From 1757 to 1772 they also owned a horse. Nevertheless, from 1759 onwards the family held only 3.064 *koku* (half of their former holdings), and under Zenzō this dropped further to 2.192 *koku* in 1803, 2.064 *koku* in 1805, and 1.924 *koku* in 1808 before increasing back to 2.118 *koku* in 1809, 2.064 *koku* in 1810 and 2.118 *koku* in 1811 and 1812. In around 1805 Zenzō's wife gave birth to a boy named Jirō (次郎) (later Shirō (四郎)) whose naming potentially indicates that the couple had had other children who had passed away before reaching the age of two. The name Jirō was usually given to the second son of a family, while Shirō would often indicate the fourth male child.

Although the story of San's family does not tell us about her death, whether it was caused by measles or just coincidentally fell in a year with a measles epidemic, it allows us to look beyond the numbers to discover the real people who lived in these villages. We can see that San's family had a tumultuous life during the second half of the eighteenth century. Three members died in a period of four years with the deaths of San's great-great-grandfather and great-grandmother likely accelerated if not caused by the Great Tenmei famine. This likely radically changed family dynamics as the family quickly shrunk from a 7-person to a 3-person household. Meanwhile their wealth shrunk over several generations, meaning that by the beginning of the nineteenth century the family was only producing enough rice to feed approximately two adults. San's mother and father had lived through previous epidemics. Zenzō was born a few years before the 1776 epidemic, and both he and his wife may have experienced the epidemic of 1782. Nevertheless, in 1803 both were still under the age of 30 and statistically still at risk from catching measles. That year San died, and observing the naming choices related to their son who was born two years later, it might be possible to infer that the couple had other children who died in infancy though it is not possible to ascertain when. This is the sort of human story that exists beyond our data and which we can begin to reconstruct by piecing together the evidence found on *DANJURO*.

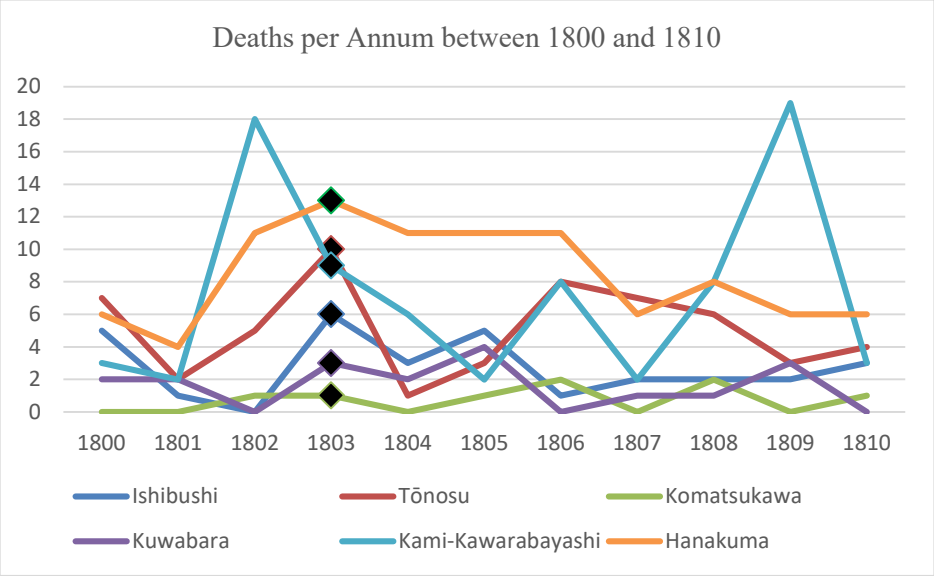
Limitations

There are a number of limitations to using data from *shūmon aratame-chō* and the *DANJURO* platform that extend beyond the criticisms offered

earlier in this paper. Since the data do not record the causes of death, it only allows for a comparison of the number of deaths during different years. In some cases, this can be misleading since years with measles epidemics do not always represent peaks in the numbers of deaths in a given timespan. This has already been illustrated in Table 4 which shows that some measles epidemic years saw a mortality deficit, that is, a lower number of deaths than the average year in the preceding decade. Nevertheless, some further exploration is potentially warranted. Table 8 and Graph 1 show the number of deaths in each village from 1800 to 1810. During this period, there were two influenza epidemics. The first spanned 1801–1802 and the second occurred in 1807, and in addition to this, there was a measles epidemic in 1803 (Jannetta 48–49). While 1803 represents the largest number of deaths for Ishibushi, Tōnosu, and Hanakuma, years with measles epidemics do not always display a significant difference in the number of deaths compared to years without measles epidemics. Note, for example, that while there were six deaths in Ishibushi in 1803, there were five in both 1800 and 1805. In Komatsukawa, on the other hand, there was only one death in 1803. Kami-Kawarabayashi had a much greater number of deaths in 1802 and 1809, while Hanakuma consistently saw more than 11 deaths each year between 1802 and 1806 with 1803 marking a small peak of 13 deaths. While it is important to observe that the average number of deaths recorded in years with measles outbreaks are higher than the average number of deaths overall, there is a potentiality that this sort of analysis misses other patterns happening on a micro-contextual level and within smaller timeframes.

Year	Ishi-bushi	Tōnosu	Komatsu-kawa	Kuwabara	Kami-Kawaraba-yashi	Hanakuma
1800	5	7	0	2	3	6
1801	1	2	0	2	2	4
1802	0	5	1	0	18	11
1803	6	10	1	3	9	13
1804	3	1	0	2	6	11
1805	5	3	1	4	2	11
1806	1	8	2	0	8	11
1807	2	7	0	1	2	6
1808	2	6	2	1	8	8
1809	2	3	0	3	19	6
1810	3	4	1	0	3	6

Table 8:
Deaths per annum (1800–1810). Compiled by the author.



Graph 1:
Deaths per annum (1800–1810). Compiled by the author.

In addition to issues with the sort of information that can be garnered from *shūmon aratame-chō* in regard to epidemics and the potential risks of overlooking patterns at a smaller level, there are also limitations created by *DANJURO* as a platform. *DANJURO*'s analysis program allows users to quickly download pre-sorted data by village including the population, the number of births, the number of deaths, the crude mortality rate, comparisons of age of death, comparisons of gender of death, and so forth, and as explored above, its search functions allow users to access data on individuals and their families. I wonder to what extent the ways that the developers have decided to sort the data contained in *DANJURO* and the functions that they have built into the platform shape our research questions and whether they cause us to potentially overlook others. Although the user interface is dated, it is functional and easy to use. The primary problem with *DANJURO* is that it no longer contains any photographic data of the sources that it uses. The user can still access the pages where photographs were stored, but the photographs no longer appear (with the exception of Komatsukawa village). This creates a potential barrier since sometimes it is necessary to interact with the source itself or its textual content rather than just the data that are taken from it. Indeed, if the full textual data for the information included in *DANJURO* were available for download, other sorts of analyses would also become possible. In any case, these small issues aside, *DANJURO* provides a useful tool for exploring demographic trends during the Edo period in the villages that it features.

Conclusion

In this paper, I have utilized data from *shūmon aratame-chō* accessible through *DANJURO* ver. 7.0 to attempt to see whether these population registers have any utility for studying epidemics in Edo period Japan. Although other types of population registers such as *kakochō*, which as noted record deaths, are likely more useful than *shūmon aratame-chō* for exploring the effects of epidemics, it is still possible to observe the influence of epidemics within these documents. The influence of epidemics can primarily be observed through excess deaths, higher than average crude death rates, and higher than average numbers of death amongst the young. As such, while *shūmon aratame-chō* certainly have limitations for studying epidemics, they should not be completely overlooked particularly since large amounts of data stored on platforms such as *DANJURO* are becoming publicly available. Another observation garnered from the data is that

measles epidemics appear to have been more severe than other epidemics. Nevertheless, due to their infrequency and the small sizes of village populations, increased death rates likely went unnoticed by villagers. It was likely the other aspects of epidemic diseases, such as their symptoms and virulence, that caught people's attention. Further research might be able to employ *DANJURO* to explore new questions about the influence of epidemics by utilizing its large range of analytical tools.[4] Indeed, *DANJURO* is a criminally underused resource with much more potential for research not only on diseases, but also other demographic trends.

One of the most exciting developments that arises from the use of *DANJURO* is the ability to humanize data through a "close reading" of the texts. Usually, it is difficult to find large collections of *Shūmon aratame-chō* that point to yearly changes in a community, but *DANJURO* provides these data and makes them easily accessible. We can use *DANJURO* to look at the changes experienced on an individual and a familial level using our external knowledge of Japanese history to interpret what was happening. In other words, *DANJURO* facilitates historical storytelling that can help to humanize data that are usually reduced to impersonal numbers when a "distant reading" or demographical approach is taken.

Waseda University, Japan

James Harry Morris, MTheol, PhD, FRAS is an associate professor at Waseda University, Waseda Institute for Advanced Study in Tokyo, Japan.

Notes

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1 Amongst the sources used here the 1670 epidemic is only referred to by Suzuki ("Edo jidai no mashin to iryō—Bunkyū ninen mashin sōdō no haikei o kangaeru" 502).

2 In addition to Jannetta's source, this is also noted in Katsushika's *Hashika hitsuyō* (37). It states:

> 年三十歳頃の医師は八歳九歳の時にはしかを見たることなれば名家の子といへとも療治の仕方は習練なかるべし六十七十の老医も麻は僅に両度手かけたるなるべし疱瘡とちがひ連年なき病ゆへゆるかせにすべからず.
>
> [A doctor at the age of 30 would have seen measles at the age of eight or nine, so even if he belonged to a famous family, he would not have learned how to treat it. An old doctor of sixty or seventy years old will have only treated measles twice.

This is not like smallpox, it is not a disease that lasts for years, and therefore must not be neglected]. (Translation is mine).

3 See Kawaguchi and Nakayama "'Shūmon aratame-chō' dētabēsu (DANJURO) no kaihatsu" [Development of the 'Shūmon aratame-chō' Database (DANJURO)] 125–34; Kawaguchi "'Shūmon aratame-chō' dētabēsu shisutemu (DANJURO) no kairyō" [Improvements to the 'Shūmon aratame-chō' Database System (DANJURO)] 1–8; Kawaguchi "Konpyūtā o mochiita Edo jidai no jinkō bunseki hōhō" [Computer-based Methods for Edo Period Population Analysis] 54–58; Kawaguchi et al. "'Edo jidai ni okeru jinkō bunseki shisutemu (DANJURO ver. 2.0)' no kōchiku" [Development of the 'Edo Period Population Analysis System (DANJURO ver. 2.0)'] 17–24; Kawaguchi "'Edo jidai ni okeru jinkō bunseki shisutemu (DANJURO ver. 2.0)' no kōchiku unyō riyō" [Construction, Operation, and Usage of the Edo Period Population Analysis System (DANJURO ver. 2.0)] 1–28.

4 Eugenio Paglino, et al. note that in the case of COVID-19 the number of excess deaths can also reflect deaths indirectly caused by the disease including those "associated with reductions in access to health care, hospital avoidance due to fear of COVID-19 infection, increases in drug overdoses, and economic hardship leading to housing and food insecurity" (1). We might also assume that the excess deaths recorded in *shūmon aratame-chō* were not only deaths directly from measles, but also related to societal changes during the epidemic period.

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Arctic InfraScapes: Mobilizing Arts, Science, Local and Indigenous Knowledge to Understand Infrastructure Imaginaries

Olga Zaslavskaya and Vera Kuklina

ABSTRACT
The Arctic region is a complex and dynamic environment, inhabited by Indigenous and non-Indigenous communities and non-human species. Understanding and engaging with the Arctic requires interdisciplinary approaches that integrate sciences, arts, local knowledge, and Indigenous perspectives. The exhibition *Arctic InfraScapes* (2023) and other multimedia projects initiated by the international platform ArtSLInK (Arts, Science, Local, and Indigenous Knowledge) used an audio-visual language and recent digital realms to express concepts and ideas about the future of the Arctic *hard* and *soft* infrastructures affected by the climate change. The article presents the Indigenous scholar and curator's perspective on the form and process of creating multimodal narrative(s) based on the ArtSLInK methodological approach. It seeks to showcase how this approach provides grounds for analyzing the possibilities and challenges associated with converging diverse knowledge systems. (OZ and VK)

KEYWORDS: Arctic, infrastructure, ArtSLInK, transmedia storytelling, exhibition

> "The function of art is to do more than tell it like it is—
> it's to imagine what is *possible*." Bell Hooks (2008)

Over the course of the past several million years, Earth's climate has exhibited alternating periods of warmth and cold, driven by a multitude of natural factors. Yet, the contemporary era finds humanity at a crossroads, where anthropogenic activities have reached a scale at which they wield the potential to trigger profound and potentially catastrophic global consequences (Morton; Burtynsky et al.). Moreover, Indigenous communities have little access to subsistence resources both due to climate change, and infrastructure-driven industrial development. To address these

ambiguities, we need "some way to register, communicate and address these changes in natural–cultural worlds" (Gabrys and Yusoff 2). Art, literature, and media have the power to raise awareness, evoke emotions, catalyze conversations, and inspire collective action. Creative expressions can bridge the gap between complex scientific data and public understanding, making climate issues more relatable and urgent for a wider audience. Cultural narratives, traditions, and Indigenous knowledge systems can provide invaluable insights into sustainable practices that have stood the test of time. By highlighting the ArtSLInK (Arts, Science, Local, and Indigenous Knowledge) methodological approach, the article seeks to showcase possibilities and challenges associated with converging diverse knowledge systems. It employs a combination of theory and practical engagements to map interconnected phenomena and methods of inquiry and identify potential areas of synergy and collaboration between art, science, and Indigenous knowledge. The article presents the Indigenous scholar and curator's perspective on form, process, and analysis of creating various multimodal narratives based on ArtSLInK's methodology that was originally formulated by authors in collaboration with Andrey Petrov. It emphasizes the role of transmedia storytelling as a means to bridge diverse knowledge systems and explores how digital media can be utilized to communicate and express the convergence of different ways of knowing.

In our efforts to bring together diverse narratives, we draw insights from experiences in the Arctic, a region traditionally depicted as an empty space with harsh climates and polar bears (Shields). Only recently has this public imagination begun to shift, thanks to the challenges posed by Indigenous communities, who rightfully consider the Arctic as their home (Watt-Cloutier). Exploring polar aesthetics, scholar Lisa E. Bloom links racial, sexual, and gendered violence to environmental destruction. While contributing the least with traditional lifestyles, these Indigenenous communities became the first ones to experience the effects of climate change as the Arctic is warming four times faster than the rest of the planet (Rantanen et al.). Shortening ice and winter road seasons hinder transportation accessibility for communities in the continents, while permafrost degradation leads to coastal erosion and infrastructure damage (IPCC). However, infrastructure issues are the ones that play an ambiguous role in the Arctic that require close attention. Melting ice opens up access to resources and maritime transportation across the Arctic Ocean—which is what led to the colonization of the Arctic and settlers' migration in the first place. As this colonization was formulated as an endeavor to "conquer the

permafrost" (Shiklomanov et al.) and "Mastering the North" (Slavin), the ultimate efforts were made to isolate humans from the environment (Jull). One of the outcomes resulting from such framing, which we witness today as most Arctic residents live in cities, is the estimated several billion dollars of infrastructure damage caused by climate-induced permafrost degradation (Streletskiy et al.). The multidimensional and intricate human–environment relations embedded in Arctic infrastructures provide an opportunity to focus on frozen infrastructures that remain misunderstood and inadequately explored (Kuklina et al.). Deep cultural foundations underlying the notion of infrastructure require us to engage in discussions about environmental humanities.

In this paper, we provide a larger context of relations between Arctic infrastructures and future imaginaries' understanding, which require convergence of diverse sources of knowledge. Moreover, we underscore the notion and relevance of digital environmental humanities as a methodological tool essential for navigating the complexities of these relationships. Subsequently, we share our insights gained from organizing the Arctic InfraScapes exhibition, where our endeavors focused on uniting Indigenous and non-Indigenous scholars, artists, and community representatives to collaboratively generate knowledge. The lessons derived from this experience hold significance not only for grasping the intricacies of infrastructures, but also for delving into alternative human–environment relationships that must transform to effectively address climate change and other environmental injustices.

Arctic infrastructure(s) and future imaginaries

Infrastructure is a critical way for humans to engage with each other and the natural environment. According to Brian Larkin, it consists of built networks facilitating the exchange of goods, people, and ideas, and their ontology based on the fact that "that they are things and also the relation between things" (329). Infrastructure encompasses both hard or built structures, and soft elements, such as social, economic, and cultural relationships, including the arts. Infrastructures serve as the foundation for various activities and are studied across multiple disciplines (Furlong; Easterling; Petrov). Moreover, nature and non-human life forms are considered as infrastructure in recent research (Carse; Barua).

Recently, digital technologies have become essential components of both hard and soft infrastructure, particularly in the post-digital era (Negroponte; Cascone). In this context, Digital Environmental Humanities

(DEH), an emerging interdisciplinary field, offers a compelling approach to the study and understanding of the complex interactions between human activities, cultural contrasts, and the natural environment using digital tools and methodologies. It is primarily rooted in the broader realm of Environmental Humanities (Nye et al.). DEH's domain encompasses an array of dynamic interactions between nature and culture, which vary across different societies and historical eras. These interactions extend beyond mere physical structures; they also encompass the intricate social fabric woven from a tapestry of artifacts, language, artistic expressions, ideas, attitudes, and an ever-evolving sense of place.

The concept of infrastructural imaginaries, building upon Sheila Jasanoff and San-Hyun Kim's notion of sociotechnical imaginaries, delves into the interplay between infrastructure planning, lived experiences, and potential futures (Jasanoff and Kim). Imaginaries are not merely abstract ideas; they are also actively constructed and wield significant influence over cultural norms, societal values, and policymaking. They are also linked to the role of technology within infrastructure, traditionally seen as a blend of nature and human-made elements. The envisioning of the future holds a prominent place within the realms of social sciences and humanities; however, the role of the arts in this context is intricate and demands further theoretical exploration and practical engagement.

While conventional discourse on the relationship between science and the arts often views the latter as a means of communicating scientific results, we advocate for a new methodology, since, as Gunther Kress explains, the world of communication has changed and is changing still because of a vast web of intertwined social, economic, cultural, and technological changes. Another reason for revising relationships between art and science is connected with the growing interest in sustainability science, where the key is the "involvement of actors from outside academia into the research process" (Lang et al. 25).

We argue that no single perspective or knowledge system can adequately address the complex issues associated with infrastructure development in today's world. However, when artists, scientists, local communities, and Indigenous people collaborate, they bring their unique perspectives, expertise, and ways of knowing the world around them to the table. This collaboration enriches the discourse surrounding infrastructure development and its implications for society and the environment, advocating for more inclusive and sustainable solutions. By involving multiple stakeholders, this approach emphasizes the convergence of diverse

perspectives and knowledge systems, promoting infrastructure projects that are not only functional, but also culturally sensitive, environmentally sustainable, and socially equitable.

In search of new approaches: art, science, and arts-based research (ABR)

The idea of the inherent disparities between art and science often finds its roots in Charles Percy Snow's renowned *The Two Cultures'* perspective. Nonetheless, an alternative perspective posits that arts and sciences are co-dependent phenomena, emphasizing that scientific knowledge alone remains insufficient for addressing the multifaceted challenges facing humanity (Bullot et al.; Gabrys and Yusoff). Throughout history, art and science have mutually complemented each other to understand the world and engage diverse audiences, thereby instigating motivation for change. Furthermore, both art and science draw upon common cognitive approaches (Bullot and Reber). In her 2002 TED lecture, Mae Jemison eloquently expressed that "our mission is to reconcile, to reintegrate science and the arts." In her opinion, the divide originated centuries ago, now reaching a critical juncture, and persisting in the belief that the arts and sciences are separate, and fashionable disinterest in either domain could potentially lead to grave consequences.

In recent years, the discourse on the communication between science and art has become more important than ever. Scientists and engineers are increasingly adopting art and design methodologies to enhance their creative and critical thinking. Similarly, artists and designers are assimilating knowledge emanating from experimental, theoretical, and computational sciences into their research. This fusion is commonly referred to as ArtScience (Edwards). Its historical evolution is rooted in the natural sciences, where scientists have sought to employ artistic techniques and practices to conceptualize their work in more innovative and imaginative ways (Malina). Representatives from the social sciences have also ventured into the realm of ArtScience, viewing it as a hybrid form that ultimately yields an emergent synthesis between art and science.

Another approach involves fostering communication between science and art through the method of arts-based research (ABR).[1] Coined by Elliot Eisner, ABR is presently characterized as an approach that employs the arts to explore, understand, portray, and even question human actions and experiences (Baden and Wimpenny; Wang et al.). Art is not seen merely as a tool for observing and describing empirical processes, but as a

dynamic and innovative method that pushes the boundaries of integrating artistic practices with traditional research methodologies.

ABR, as a diverse qualitative research method, employs various artistic mediums to explore and grasp research problems, subjects, or texts. It enriches qualitative research by emphasizing the construction of meaning in data collection and involving participants through artistic expressions (Barone and Elsner; Leavy). It often integrates art creation with conventional research methods like interviews, focus groups, or ethnography. ABR can be utilized for generating, disseminating, or interpreting research, frequently manifesting through exhibitions, installations, or performances. Its methods often embrace participatory approaches, empowering participants as research collaborators. They engage in creative self-expression using various art forms, such as poetry, drawing, mapping, collage, photography, participatory video, digital storytelling, and performance at any research stage. Empowerment may engage participants in making decisions about various aspects of the art-making process, including data selection, analysis, and guiding research to explore topics relevant to their experiences.

Consequently, ABR facilitates more profound dialogues than traditional qualitative methods and supports discussions on complex or sensitive issues. By utilizing narrative, visual, audio, and experiential art forms, ABR unveils latent knowledge as participants attribute meaning to their experiences in non-verbal and non-written ways. The emotional resonance of art encourages audiences to engage in profound, empathetic, and unconventional reflections on others' experiences.

As a relatively nascent field of inquiry, ABR's terminology and definitions vary among scholars. While numerous artistic forms and methods are available, there often exists a dearth of guidance on their practical application within a research context. This can pose challenges for newcomers to ABR seeking a comprehensive understanding of available options, their interrelationships, and their practical utility within the research community (Finney and Cresswell). Consequently, the conceptualization of this research approach remains a challenge, and the editors of the volume titled *Critically Evolving: Critical Approaches to Arts-Based Research* emphasize the necessity for more thoroughly theorized and critically informed approaches to ABR, despite some notable advancements in the field (Harris et al.).

Nevertheless, it is important to acknowledge that regarding art as a formal methodological approach in academic research is a relatively recent

development. We are still in the ongoing process of formulating and refining our positions and understanding how art can be systematically applied as a method in the realm of academic research (Greenwood; Norström et al.).

Arts, science, local and Indigenous knowledge (ArtSLInK)

As noted earlier, the discourse on converging diverse knowledge systems has gained attention across scientific disciplines and creative domains. Additionally, there is a growing recognition that Indigenous knowledge cannot be treated as an extractable resource separated from the place, people, and culture that gave rise to it (Thomas). Simultaneously, the deep and holistic human-environment relationships developed by Indigenous peoples are crucial for understanding the current climate crisis and for restoring balance, harmony, environmental sustainability, and societal well-being (Odora-Hoppers).

In the US context, rapid Arctic changes proved the necessity of collaborative work between scholars and Indigenous communities, leading to the creation of one of the National Science Foundation's 10 Big Ideas dedicated to the Navigating the New Arctic program. One of the program's requirements is engagement with at least two knowledge domains to be eligible for participation. While this requirement meant that any two knowledge domains could be present, for instance, social and natural sciences, it sparked multiple research projects engaging with Indigenous communities in the Arctic. This and other initiatives prove that co-production of knowledge between Indigenous and non-Indigenous scholars and communities is becoming one of the critically important practices of research in the Arctic (Yua et al.; Degai et al.).

Even less collaboration between different knowledge systems has been done in the field of Indigenous arts (Hauck). There are efforts by Indigenous artists to critically examine colonialism and extractivism, such as works by Annie Pootoogook to explore colonial trauma (Bloom) and Sami artists protesting against dam construction (García-Antón et al.). An example of arts-based research for knowledge co-creation is the combined efforts of water monitoring and management practitioners with Indigenous youth in the Grand River and nearshore Lake Erie in Canada (Ho-Tassone et al.).

Founded in 2019, ArtSLInK actively addresses this knowledge gap as a cross-arts and knowledge co-production platform. Devoted to fostering collaborations among various knowledge systems, ArtSLInK engages in

community-based research and organizes events, exhibitions, performances, and participatory cultural initiatives. A primary objective is to map and unite diverse perspectives and knowledge systems through various media, thereby facilitating open discussions on the topic. The overarching goal is to create shared understandings and solutions for addressing the challenges of climate and environmental change.

ArtSLInK began its exploration of converging dissimilar knowledge systems with meetings and workshops before the COVID-19 pandemic. The global crisis necessitated a swift transition from physical gatherings to virtual meetings, resulting in limited tangible outcomes. However, this challenge spurred us to embrace digital means. Utilizing a multifaceted approach that incorporates ABR methods, storytelling, and various digital media outlets, we embarked on a journey to cultivate the realm of transmedia storytelling.

Transmedia storytelling, also known as transmedia narrative or multiplatform storytelling, remains a relatively recent and evolving field with an open definition. According to Henry Jenkins and Renira Gambarato et al., transmedia storytelling is not only about replicating content across different media platforms but rather creating immersive world-building experiences that unfold, evolve, and generate new and relevant content. While TS has mainly been associated with entertainment and fictional narratives, it is important to note that the same evaluative criteria applied to fictional transmedia projects can also be effectively used to assess nonfiction transmedia endeavors (Kerrigan and Velikovsky). Nonfiction transmedia storytelling represents largely uncharted territory, inviting exploration and innovation to inform, educate, and engage audiences in entirely novel and impactful ways (Scolari 49).

Storytelling has been a fundamental aspect of human communication throughout history and serves as a tool to bridge contemporary information technology and ancestral wisdom. Indigenous communities have adopted digital storytelling to revitalize their cultures and languages (Baloy; Degai and Thom). It has also become a crucial instrument for creating new artistic representations rooted in Indigenous perspectives, which offer a distinct understanding of humanity's place in the world (Wallner and Jandl). From the outset, the ArtSLInK team incorporated transmedia storytelling into its methodological toolkit. Faced with limited mobility and communication during the COVID-19 pandemic, we placed a significant emphasis on digital storytelling as an innovative form of ABR that combines storytelling, teamwork, and technology. Digital storytelling

seamlessly blends various media elements like photography, text, audio, voiceover, hypertext, and video, making use of rapidly advancing digital tools and software to create compelling narratives (Dusi et al.).[2]

Our initial digital storytelling project, "Domesticating Landscapes: Re-considering Settlers' Perspectives on Arctic Cities," was showcased at the 10th International Congress of Arctic Social Sciences (ICASS X 2020).[3] The next venture, undertaken as part of the scientific project "Informal Roads," continued to harness the power of digital storytelling. In the summer of 2021, we combined in-situ artist observations with rigorous physical geography measurements and in-depth interviews conducted with the local and Indigenous communities during the expedition in the Baikal region, significantly expanding the project's scope. Integrating local and Indigenous knowledge into our art-science collaboration framework offered a holistic understanding of the environment, cultural sensitivity, and the preservation of invaluable cultural heritage (Agrawal "Dismantling"; Battiste and Henderson).

The project's outcomes, a digital presentation titled "Remote Roadscapes and Beyond," along with the photo exhibition "Martian Taiga," were well-received during the Arctic Social Science Week (ASSW) in Tromsø, Norway, initiating discussions on the role and significance of Indigenous knowledge in artscience explorations.[4]

As we continue our journey at ArtSLInK, we remain committed to contributing to this unexplored frontier, recognizing its potential to shape the future of storytelling and knowledge convergence. In our pursuit of pushing boundaries, we actively seek additional methods, particularly those proposed by digital environmental humanities, to further enhance and refine the approaches that ArtSLInK represents. Our dynamic and inclusive program incorporates workshops, hands-on field experiences, and exhibitions, all designed to bridge the gap between scholars, artists, and the public. The multi-year exhibition program, "Arctic StoryWorlds," transcends traditional exhibitions; it is a living narrative unfolding over several years. Through this program, we aspire to create immersive, multi-sensory experiences that transport visitors into the heart of the Arctic, exploring its diverse cultures, ecosystems, and challenges. Each installment of the program serves as a chapter in our ongoing exploration and collaboration, inviting the public to join us on a journey as we uncover the hidden depths of this unique region.

Arctic InfraScapes 2023

The exhibition "Arctic InfraScapes" was installed during the Arctic Science Summit Week at the University of Vienna, Austria, on February 18–24, 2023. Alongside our other multimedia projects, the exhibition employed the power of audio-visual language to convey the concepts and ideas regarding the future of Arctic infrastructures profoundly impacted by the climate-induced degradation of frozen structures.[5] The exhibition itself stood as a collaborative endeavor, uniting scholars and artists engaged in various scientific and artistic projects pertaining to the Arctic region.[6]

Figure 1.
Arctic InfraScapes–2023.
View of the exhibition at the Vienna University in Austria.
Courtesy of Olga Zaslavskaya.

While developing the exhibition concept and its display layout, we critically evaluated several theoretical frameworks. Infrastructure can be analyzed from at least three distinct perspectives: as an object, a network, and a system (Zandvoort and van der Vlist). Given that this marked the inaugural exhibition in the series of "Arctic StoryWorlds," we accorded primacy to artistically representing the infrastructural objects. Whenever feasible, we sought to illustrate the intricate web of relationships and interdependencies inherent in the infrastructure network, where nature, humanity, and the built environment coexist and interact.

The term "infrascapes," in this particular context, serves a multifaceted purpose (van der Wal et al.). Firstly, it directs our attention to landscapes that can be scrutinized as material, social, or mental constructs. Irrespective of the analytical approach employed, landscapes are invariably regarded as products of dynamic interactions between the natural world and human agency. The human impact on landscapes becomes particularly evident when considering infrascapes. The second consideration is based on our reliance on ABR methods and our position at the inception of the "Arctic StoryWorlds" project. Therefore, we resolved to concentrate on a foundational method shared by both art and science: in situ observations. This approach enabled us to capture discourse and initiate discussion on the multifaceted issues of Arctic infrastructure. The relationship between humans and landscapes, especially in the Arctic context, defies conventional research methodologies. Thus, we embraced artistic methods to illuminate the complex amalgamation of materials, emotions, values, and desires enmeshed within the landscape, delineating the transformative process that led to the emergence of infrascapes.

Finally, to succeed with the creation of the exhibition's multimodal narrative, we turned to the concept of the "polyphonic assemblage" (Tsing 24). This concept refers to intricate networks composed of diverse and heterogeneous elements engaged in nonlinear and dynamic interactions. In her work, Anna Tsing elaborates on this concept to illustrate the entanglements between various human and non-human modes of existence, each characterized by distinct temporalities that converge only contingently, giving rise to indeterminate transformations. The notion of polyphony, often employed in music theory to depict the simultaneous amalgamation of multiple independent melodies or voices, finds a parallel in the realm of social and cultural analysis, where polyphonic assemblages denote the interplay between an array of social, cultural, political, and economic elements that generate complex and multi-layered structures. These elements encompass individuals, organizations, technologies, media, and ideologies, all engaged in interactions that influence each other across various dimensions, shaping a dynamic and ever-evolving system. What sets polyphonic assemblages apart is their capacity to engender emergent properties that cannot be discerned in any of the individual components alone. This concept proves invaluable in deciphering the intricacies of contemporary societies and the interplay among diverse social, cultural, environmental, and technological facets. It emphasizes the need to adopt a holistic and transdisciplinary approach to the study of complex phenomena

while acknowledging the importance of diversity and heterogeneity of actors shaping social structures and processes (Leavy; Lang et al.; Bernstein; Hansson and Polk).

The exhibition begins by showcasing the natural infrastructure elements that define the Arctic region: snow, ice, and permafrost (Laptander). These components of the Arctic environment were represented through a series of captivating installations created in collaboration between artists, scholars, and local and Indigenous people.

Beili Liu's work "Arctic Mending/Snow Mandala" is deeply rooted in her ongoing research within the Circumpolar North. Through the lens of handcraft, labor, and the experiences of Arctic Indigenous people, Liu delves into pressing environmental concerns and geopolitical shifts.[7] In a fragile Arctic landscape, Liu combines human action with the urgency of the climate crisis, weaving together a narrative of hope and healing through on-site performances. The focus on the act of weaving, as one of the oldest surviving crafts in the world, allows her to extend its meaning beyond the simple act of producing garments; it weaves together the tapestry of human existence itself. In the context of Arctic clothing, the intricate relationship between weaving and garment construction takes on a particularly vital role. Diana R. Ewing and Christyann M. Darwent emphasize the critical importance of understanding how thread technology influences the engineering of Arctic clothing. This understanding is indispensable when it comes to ensuring the protection of individuals in the unforgiving and harsh environmental conditions that define year-round habitation in the Arctic. In this context, the failure of a seam could prove not just inconvenient but potentially fatal. The connection between weaving and survival, in this case, becomes abundantly clear. It is a testament to how human ingenuity and creativity have been harnessed to adapt to even the harshest of circumstances, turning the act of weaving into a tool for survival.

Liu's installation highlights the interplay between words and the deep-rooted meaning of weaving and mending in traditional culture. This interplay underscores the idea of care and survival on a global scale. Weaving, in this context, symbolizes more than just the physical act of creating clothing; it represents the interconnectedness of humanity. It illustrates how the threads of culture, tradition, and craft are interwoven, binding societies and generations together. In essence, weaving transcends its utilitarian purpose, becoming a powerful symbol of resilience, cultural continuity, and the indomitable human spirit. It weaves together not only

threads and fabrics but the stories, history, and wisdom of generations, ensuring that they endure, much like the fabric of Arctic clothing, in the face of the most challenging conditions.

Quite a different representation of the Arctic environment is offered by Andrey Petrov and an Indigenous Sakha scholar Stanislav Ksenofontov, who emphasize that Arctic Indigenous communities have long relied on natural cryogenic resources—ice, snow, and permafrost. Their collaboration with Indigenous Sakha artist Maryana Marakhovsky resulted in an art object "Snowflake" that visually represents Sakha culture and its reliance on snow. It serves as a unique visual representation of text data, akin to word clouds, highlighting culturally and socio-economically important traditional terms interwoven together in the Sakha ornaments.[8]

The frozen world narrative deepens with the addition of *The Bull of Cold*, a story rooted in three Sakha legends that symbolize the ancient beliefs of the Sakha people. These tales are shared by Indigenous Sakha scholar Vera Solovyeva.[9] They depict the bull of winter, an underworld inhabitant carrying illness and greed, as a symbol of the universe's dark side. In contrast, the horse, an inhabitant of heaven, represents wealth and prosperity. The Middle World of humans is the only place where these mythical beings from different realms can intersect. This narrative weaves a tale of the ongoing struggle between life and death, drawing connections to natural phenomena throughout the calendar year as observed and inscribed by the Sakha people in their ecological knowledge. This knowledge is passed down through generations in the form of poetic legends. For instance, the annual short-term warming in February is explained as the *Bull of Cold* losing one horn. Subsequent sharp cold snaps and blizzards occur when the *Bull of Cold* fiercely resists retreating. Spring finally arrives when the creature loses its second horn and heads back toward the Arctic Ocean.

Continuing the exploration of the underestimated value of the frozen matter, the authors of the other three installations examine the qualities of permafrost—the frozen ground of soil and water persisting for extended periods. It has long remained an invisible component of the Arctic's frozen infrastructure, providing essential support for landscapes and the built environment (Kuklina et al.). The artworks centered around permafrost offer a diverse range of perspectives, blending both artistic and scholarly approaches, highlighting its important ecosystem services, and shedding light on the profound transformations within this frozen terrain due to the relentless advance of climate change. They capture the essence of permafrost's metamorphosis in unique and thought-provoking ways.

One such example is "Mosaic" by Yulia Levykina, a poetic representation of the permafrost structure, which the artist likens to "shards of ice or colored crystals in a child's kaleidoscope," emphasizing how these fragments complement and overlap, creating a dynamic and ever-evolving pattern.[10] Levykina perceives it as a reflection of human activity, extending not only across the surface but also delving deep into the Earth. Here, natural processes intertwine with the impact of human presence, resulting in a mosaic that embodies the unique amalgamation of soil, rock, and ice. By deliberately selecting transparent materials, the artist allows viewers to peer through layers of light, unveiling a captivating transformation of colors: from the cold, wintery transparencies of blue, indigo, and amethyst to the penetrating heat, melting, and metamorphosis embodied in ochre, orange, and ruby hues. The mobility and mutability of each layer give rise to a multi-dimensional mosaic, enabling viewers to perceive one layer through another. The pulsation of cooling and heating creates a captivating polygonal pattern, an intricate dance that mirrors the dynamic interplay of forces within the permafrost landscape.

Artist Nikki Lindt, on the other hand, approaches the permafrost through a sensory journey that combines visual and auditory elements. Lindt's art captures the in-situ thawing process through both brush strokes and underground recordings. This immersive experience invites visitors to witness the gradual transformation of this frozen landscape, urging them to slow down and listen deeply. Lindt's underground soundscape, which features the melting of snow and ice in the Arctic soils, emphasizes the need for a more intimate connection with this sonic ecosystem to foster a profound sense of interconnectedness, stewardship, and hope.[11]

Meanwhile, Olga Lo's installation, "Zombi Fires," serves as a stark reminder of the evolving challenges facing the Arctic due to climate change. After particularly hot summers, peatlands that were formerly protected by permafrost, become so dry that if a fire ignites, it can penetrate underground and continue to smolder beneath the snow throughout the entire winter. In the spring, these fires rekindle and resurface, hence the name "zombie fires."[12]

Figure 2.
Arctic InfraScapes–2023.
Installation "Zombi Fire" by Olga Lo.
Plexiglass, 70×40×20 cm, 2022–2023.
Courtesy of Olga Zaslavskaya.

Wildfires, ignited by lightning strikes or human activities, are currently sweeping across the Arctic at an unprecedented pace. Although wildfires have traditionally played a role in the natural dynamics of Arctic boreal forest and tundra ecosystems, rising temperatures have escalated their frequency and magnitude. At the exhibition, we showcased a series of art books titled "Tempus Ignis," crafted by Zosya Leutina, drawing inspiration from the narratives and research undertaken by a local scholar Natalia Krasnoshtanova in collaboration with a research team of "Informal Roads" project (Kuklina et al.). These art books were complemented by a performance titled "Under the Dome," designed to encapsulate the harrowing tale of a forest encroaching upon a village:

> It is engulfed in smoke, visibility is lost, and transportation links are interrupted. The inhabitants guess by the remains of ash burned in the rapid flames, by its shape, how far the fire is from the village, and from which side it comes. The village disappears from the route map, from the satellites, and perhaps relocates to another realm, a deaf world of smoke and fires, awaiting transformation or, perhaps, its conclusion.[13]

First encounters with wildfires can leave unforgettable impressions. During the expedition to the Siberian boreal forest in 2021, while navigating the intricate web of informal roads, the team witnessed wildfires along their path. The fusion of smoke and the reddish dust created an otherworldly Martian landscape, which subsequently became a central element in the digital exhibition "Red Taiga." This exhibit featured photographs captured by photographer Stanislav Podusenko and accompanying text by Vera Kuklina. Some of the photographs became a part of the exposition in Vienna, telling the story of the relationships interweaving extractive industries, humanity, and landscapes.[14]

Figure 3.
Arctic InfraScapes–2023.
Photographs from the series Red Taiga by Stanislav Podusenko.
Digital print, 3 pieces, 80×120 cm, 2021.
Courtesy of Olga Zaslavskaya.

The exhibition team comprised artists, scholars, local and Indigenous knowledge holders, curators, and designers. In ArtSLInK, our goal is not to transform scholars into artists but to provide them with an opportunity to unleash their creativity and explore alternative modes of expression when presenting their scientific work to colleagues and the wider public. As a result, the artworks featured in this exhibition vary across several parameters. For instance, some have developed through long-standing collaborations, while others are an outcome of emerging research initiatives. One such example is an album created by an international team

of scholars, who participated in an expedition to Northern Mongolia to build collaborations with Indigenous Dukha and Darkhad communities and gain insights into their relationships with animals, informal pathways, and the landscape.

The album was meticulously crafted and tailored for these communities to share the impressions and discoveries of the expedition. The use of the Mongolian word "МӨР" as the title of the publication and installation added depth and cultural relevance to the work. This word encompasses various forms of imprints, including animal trails, vehicle tracks, ground-level building footprints, and rock surface carvings.[15] For researchers, these images serve as indispensable tools for documenting observed landscapes, forming the basis for further scientific analyses (Moreau et al.). For instance, the utilization of drone imagery has offered the means to capture some moments that narrate the evolving cultural landscapes of the Indigenous people. An exhibited print of the mosaic of drone imagery of the Bayanzürkh village demonstrates the precarious position of the settlement on the confluence of two rivers in the area, which is particularly susceptible to floods. In the lower river vicinity, the imagery captures gers, that is, more traditional nomadic dwellings designed for easy relocation. They represent adaptation strategies to respond to environmental challenges developed over multiple generations. Conversely, in the upper reaches of the river, one encounters the presence of newer, more permanent structures, which, while symbolizing a level of modernization, are concurrently exposed to heightened risks in the event of natural hazards.

Figure 4.
Arctic InfraScapes–2023.
A print of the mosaic of drone imagery of the Bayanzürkh village taken by Dmitrii Kobylkin, orthorectified by Oleg Sizov. 2022–2023. Resolution 10.4 cm, 2023. Courtesy of Olga Zaslavskaya.

Meanwhile, the artists employ these images to convey broader narratives that delve into the layers of history imprinted on these landscapes. For instance, the presence of khirigsuurs or deer stones, ancient rock carvings, serves as evidence of the ancient traces left by nomadic civilizations (Bayarsaikhan). Inspired by these original deer stones, artist Lo created several linocut stamps, establishing a tangible connection between art, history, and the exhibition's visitors, enabling them to immerse themselves in the culture of the Mongolian world.

In the context of our rapidly urbanizing world, a significant portion of the Earth's land surface bears the indelible marks of human activities. Roads, in particular, serve as distinctive features that connect remote Arctic regions and form a crucial component of Arctic infrastructure. These roads, ranging from informal pathways traversing boreal forests to the Mongolian steppe and urban thoroughfares, offer a rich subject for analysis through various scientific methodologies, including the utilization of space imagery and remote sensing. Within Arctic cities, roads can be scrutinized further by employing specialized software applications.

Collaborative efforts between artist Leutina and an international team of geographers have yielded two art projects. The journey began with an exploration of informal pathways in the city of Nadym in the Northern Russian Federation and extended to Fairbanks in Alaska. This artistic endeavor culminated in the creation of ceramic ornamental tiles featuring reimagined motifs inspired by urban paths. In addition to the artifacts, a zine was produced, offering insights into the stages of the project and showcasing graphic works that depict entire neighborhoods and intersections, complete with schematics illustrating the movements of city residents. As the artist emphasizes, in this work, she studies the morphology of pedestrian flows in the city using drone imagery, Google Maps, OpenStreetMap, and the Strava app. The goal was to highlight the key visually representative nodes and intersections of the paths of city dwellers and to rework this into an ornament that could be a kind of the face of the city, reflecting both parts of its individuality and its similarities with other cities.

Continuing her work with Arctic cities and their paths, the artist together with remote sensing specialist Victoria Miles and a student Diana Khaziakhmetova took a close look at the streets from the pedestrian perspective, thus changing the focus of analyses and observations, describing their approach and art object. As a person traverses a city, occasional glances at their surroundings reveal the city's character—whether it is lush and inviting, or stark and concrete. This assessment hinges on the prevalence of trees throughout the urban landscape, such as in alleys, roadside plantings, and parks. Thus, the city unfolds as a dynamic, ever-changing canvas, where colors, emotions, shadows, sunlight, temperature, and the interplay of open spaces and cozy corners all play their part. For the artist "this proportion and this dynamic picture . . . is unique in every city."[16] The flipbook is an attempt to show this picture, in which all of the impressions of a pedestrian are represented by the frequency and shades of colors; it can be flipped to make a cartoon depicting the holistic color impression of the city route.

Urban infrastructure was explored more in detail in the other four installations. The shifting focus of analysis is a distinctive characteristic of another collaborative project "South of No North." This project centers around a series of photographs captured by Max Sher in the northern Swedish cities of Luleå and Kiruna. The photographs underwent manipulation and interpretation from both cultural and geographical perspectives. As Kelsey Nyland and Jacob Tafrate have emphasized in the

description of their installation, the objective was to transform the viewers' perceptions, shifting their gaze from conventional depictions of the cities' everyday built environments to aerial representations derived from satellite images that extend beyond the visible spectrum, capturing electromagnetic ranges imperceptible to the human eye.[17]

Yet another view and approach were used in the installation and performance by Aleksandra Ianchenko in collaboration with scholars Robert Orttung and Johan Sandström. Participation in the field studies in the Sweden Arctic and close work with the project team helped Alexandra to capture the palimpsest nature of the Arctic cities resulting in the blog "Sketching Atmospheres of the City," a series of urban sketches and a performance CITY-ON-LINE conducted simultaneously by the participants being physically in three different countries—Estonia, Sweden, and the US.[18] Digital artistic performances emerged as a result of the integration of digital technologies. Incorporating a wide range of media (sound, video, animation, and interactive elements), they allow artists to explore and combine various forms of expression, pushing the boundaries of what art can be.

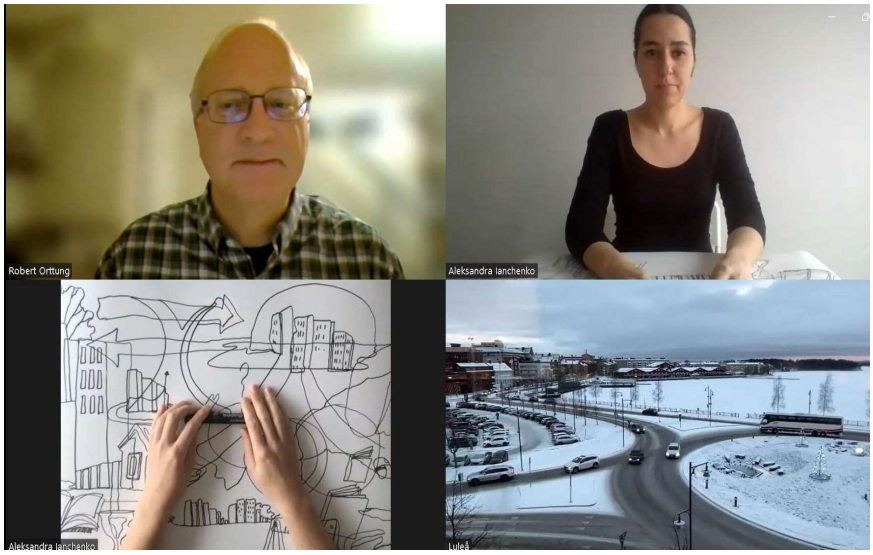

Figure 5.
The CITY-ON-LINE performance by Aleksandra Ianchenko, Robert Orttung, and Johan Sandström (2023). Courtesy of Olga Zaslavskaya.

Closely intertwined with the overarching theme of Arctic urban landscapes and their future is a collaborative project *Organizing Rocks.*[19] Sandström, along with his colleagues Tommy Jensen from Stockholm University and Magnus Fredriksson, a local artist in Kiruna, offered a distinct perspective in the analysis and representation of Arctic cities. The project explores the profound impact of human interventions in the landscape and the subsequent alterations to the ecological dynamics of these regions. Its main focus centers on the Kiruna mine in Sweden, located on the traditional land of a Finnish-speaking minority and the Indigenous Sami community. This state-owned mine serves as the nexus within a vast infrastructural mega-system in the northern region and thus raises questions regarding the delineation of a mine's boundaries—where it begins and ends—and the allocation of responsibility for its environmental and societal impacts.

This theme was continued by a social anthropologist Olga Povoroznyuk, who presented in her installation the Arctic maritime infrastructures in Kirkenes, Norway; Nome, Alaska, USA; and Tiksi, Russian Federation. In the description of her installation, she writes:

> For a long time, the Arctic has been constructed as a region experiencing unprecedented climate and environmental changes, resource extraction, Indigenous movements, and growing connectivity, with the Arctic Ocean often referred to as "the new Mediterranean." . . . Geopolitical tensions and security concerns might soon become the main drivers of infrastructural change along the Arctic coast affecting the futures of transport infrastructure projects and Arctic coastal communities entangled with them.[20]

Conclusion

The exhibition works with different types of layers in space and time that allow artists and scholars to create new meanings in the form of visual narrative as a part of a transmedia storytelling project "Arctic StoryWorlds." Collaborations between scholars, artists, and local and Indigenous community members continue to be the backbone of this program, ensuring that it remains a vibrant and evolving tapestry of perspectives.

By focusing on the infrascapes—the subtle and essential elements that underpin the Arctic environment—the exhibition "Arctic InfraScapes"

aimed to foster a deeper understanding of this fragile ecosystem and its significance to the global community. The intersection of art and scholarship in addressing the Arctic infrastructure and consequences of climate change not only raises awareness, but also offers a deeper understanding of the complex issues at hand. Through creative expressions, we gain insights into the evolving Arctic landscape and the challenges posed by climate change, ultimately fostering a sense of responsibility and the hope for a more sustainable future.

In addition to textual communication, it is crucial to utilize the power of multimedia culture to convey information about climate change and its impact on the Arctic and the world. Visual images and audio elements effectively complement texts in this regard. What sets "Arctic InfraScapes" apart is its ability to transcend traditional exhibition formats. It is not just about showcasing art and research; it is about inviting the audience to actively participate in the narrative creation. Visitors are not passive observers but active participants, engaging with the stories, ideas, and knowledge presented. This dynamic interaction fosters a sense of connection and ownership, encouraging individuals to become stakeholders in the ongoing conversation about the Arctic's past, present, and future.

"Arctic InfraScapes" is an immersive exhibition that explores the hidden, intricate, and often overlooked aspects of the Arctic region. Transmedia storytelling serves as an ideal aesthetic form for an era of collective intelligence, where new social structures facilitate knowledge co-production and dissemination within networked societies, as proposed by Pierre Lévy. In this context, art functions as a cultural attractor, uniting like-minded individuals to form knowledge communities (Lévy).

Starting with discussions of the ArtSLInK idea of transdisciplinarity and knowledge convergence and co-production, we continue with the creation of art installations to demonstrate the possibilities of transdisciplinary collaboration between scientists and artists to mutually reinforce both research and creative process through the application of different methods of knowledge production. By shifting the focus from the outcome to the process of the arts, science, and communities' collaboration, it is possible to discover in more depth value-added contributions of collaborative place-based context-specific experiences (for instance, new ways of knowing and thinking, understanding of materials and processes, and learning).

We firmly believe that the integration of methods from digital environmental humanities holds the key to unlocking innovative ways to

explore, analyze, and communicate pressing environmental issues. One area of specific interest is digital mapping and visualization, powerful tools that can transform complex environmental data into compelling visual narratives. Digital storytelling is another cornerstone in our approach, recognizing its potency in conveying complex narratives in a comprehensible and engaging manner. Looking ahead, ArtSLInK is eager to explore the untapped potential of augmented reality (AR) technologies to create immersive experiences that blur the lines between the physical and virtual realms (Hedley et al.). This exploration aligns with our commitment to pushing the boundaries of conventional storytelling, offering users a unique and interactive perspective on environmental issues. These methodologies are not merely theoretical aspirations; they are actively being integrated into various projects within ArtSLInK.

To continue our journey into the Arctic, we plan to expand the "Arctic StoryWorlds" scope and content by inviting Indigenous artists and craft-makers to co-create representations of the frozen worlds through crafty storytelling and proceed with more focused interpretations of the non-human and more-than-human world in the Arctic. We hope that the experience we gained through previous experiments with transmedia storytelling and teamwork will lead to collaborative practices of knowledge and imaginary co-production.

Indigenous arts hold rich symbolism that reflects the reciprocal, respectful, and responsible human–environment relationship. By promoting cross-cultural understanding and appreciation, the platform paves the way for sustainable practices that honor the delicate balance between human cultures, nature, and the remarkable ecosystems of the Arctic. ArtSLInK's work is a testament to the potential of unified efforts, fostering a future where cultural heritage and biological diversity thrive in harmony for the benefit of all living beings in the Arctic and beyond.

Alternative Culture Center, Hungary,
and George Washington University, USA

Olga Zaslavskaya is co-founder and director of the International Alternative Culture Center in Hungary and co-leader of the international platform *Arts, Science, Local and Indigenous Knowledge* (ArtSLInK).

Vera Kuklina is Research Professor at the Department of Geography at George Washington University and co-leader of the international platform *Arts, Science, Local and Indigenous Knowledge* (ArtSLInK).

Notes

1 Since it is a relatively recent field of study, scholars use a wide range of terms and definitions to describe ABR. Thus, Claudia Schnugg has proposed terms like "arts-based initiatives" or "artistic interventions." (5). Researchers in Canada introduced a notion of a/r/tography, which stands for (a)rtmaking, (r)esearching, and (t)eaching (Schultz and Legg). It is a unique blend of practice-based research, situated at the intersection of education and the arts (Springgay et al.).

2 The expansion of new digitally mediated disciplines, such as Digital Humanities (Gold and Klein; Ramsey), software studies (Manovich *Software, Clinical*), digital sociology (Orton-Johnson and Prior), digital art, as well as advancements in machine learning (ML) and Artificial Intelligence (AI), contributes to the growth of both digital storytelling and transmedia storytelling (Berry). During the roundtable organized in conjunction with the exhibition, a small experiment with the AI program MidJourney was presented by Olga Lo. More at https://artslink.space/2023/02/20/roundtable-during-the-arctic-infrascapes-exhibition. Since these innovative approaches are still evolving, we can expect further progress in developing collaborations across diverse scientific disciplines.

3 The project "Domesticating Landscapes" brings together representatives of natural and social disciplines and humanities along with artists and curators to present their works and experiences on the history and current status of the process of Arctic domestication. The digital presentation was put together by the authors of the article with the help of Stanislav Podusenko and other project team members. The presentation is uploaded to the ArtSLInK YouTube channel www.youtube.com/watch?v=XUYCYoC0QeQ&t=771s.

4 "Remote Roadscapes and Beyond" is a digital presentation that amalgamates several ongoing art-based projects, conceived through the collaborative efforts of scholars and artists engaged in on-site investigations within the Siberian taiga. A central focal point of these collaborations is the exploration of informal roads and their overarching influence on the forested landscape. The artistic interpretation of these roadscapes serves as an evocative and thought-provoking medium, inviting the audience to contemplate the indelible human footprint left behind by extractive practices in these remote and ecologically sensitive regions. See the full presentation on the ArtSLInK YouTube channel www.youtube.com/watch?v=2mdzsyxlgsU.

5 The exhibition was held in February 2023, on the premises of Vienna State University in Austria in conjunction with the Arctic Social Sciences Week (ASSW). For more details, visit the e-catalog https://arcticinfrascapes.com and the ArtSLInK website https://artslink.space/2023/04/26/arctic-infrascapes-2023.

6 The representatives of the following projects took part in the exhibition in various capacities: Frozen Commons: Change, Resilience and Sustainability in the Arctic (National Science Foundation, #2127364); Arctic Cities: Measuring Urban Sustainability in Transition (National Science Foundation, #2127364); The Impact of Unofficial Transportation Routes on Remote Arctic Communities (National Science Foundation, #1748092); Building Socio-Ecological Resilience through Urban Green, Blue and White Space; ERC Advanced Grant Project InfraNorth—Building Arctic Futures: Transport Infrastructures and Sustainable Northern Communities (PROJECT-ID: 885646). For more

information about the scope and content of the projects see https://arcticinfrascapes.com/about/ and the respective projects' websites.

7 About Beili Liu's artworks, see https://beililiu.com; for more information about her installation: https://arcticinfrascapes.com/arctic-mending-snow-mandala.

8 Practically all installations and art objects were created in collaboration between scholars and artists as highlighted in the exhibition e-catalog https://arcticinfrascapes.com.

9 The hand-made art book was illustrated by Vera Solovyeva. For more images and details, see the e-catalog at https://arcticinfrascapes.com/the-bull-of-cold.

10 The process of creating this installation was first presented in the digital presentation "Remote Roadscapes and Beyond" at www.youtube.com/watch?v=2mdzsyxlgsU&t=1046s. Also see https://arcticinfrascapes.com/mosiac.

11 More about Nikki Lindt and her projects at www.nlindt.com and https://theundergroundsoundproject.com/about; about the installation *Thaw and Melt. Underground Sonics and Visions* at https://arcticinfrascapes.com/thaw-and-melt-the-underground-sonics-and-visions.

12 More about this work at https://arcticinfrascapes.com/zombie-fire.

13 E-catalog entry for these two artistic works: https://arcticinfrascapes.com/under-the-dome.

14 The digital version of the exhibition is accessible at https://redtaiga.artslink.space. More about the installation: https://arcticinfrascapes.com/red-taiga.

15 The publication is compiled in English and Mongolian. It is downloadable at https://artslink.space/2023/04/24/following-nomadic-tracks-and-trails-in-northern-mongolia-about-2022-informal-roads-expedition-to-mongolia.

16 "Winterly Patterns" https://arcticinfrascapes.com/winterly-patterns is a continuation of the work presented in the digital presentation "Domesticated Landscapes" under the name "Winterly patterns: landscape domestication in footpath meshworks." The art book "Walking, Seeing, Feeling" https://arcticinfrascapes.com/walking-seeing-feeling is part of a new project on cultural biodiversity in the Arctic.

17 The scholars emphasized that while traditional maps provide a geographical reference for the collection of photographs and delineate the extent of the satellite images featured in the exhibition, analysis of satellite images utilizes ratios of segments of the electromagnetic spectrum that lie beyond the visible color spectrum. These remote sensing indices offer a surreal perspective of the ordinary, unveiling hidden elements of the landscape that escape naked-eye observation. The images are generated using the Normalized Difference Vegetation Index (NDVI) and the Ferrous Minerals Ratio (FMR), both of which rely on the shortwave infrared and infrared light reflectance of the Earth's surface to discern specific environmental characteristics. More information at https://must.artslink.space/south-of-no-north and https://arcticinfrascapes.com/south-of-no-north.

18 In her blog https://must.artslink.space/sketching-atmospheres-of-the-city, Aleksandra Ianchenko describes the method of sketching in situ that recently has garnered attention within academic circles as a potent instrument for visual ethnography and the documentation of field observations (Brice). Such drawings provide a physical, emotional, and sensory connection with the observed environment and fuse observation and description within a singular gestural act (Ingold 222).

19 *Organizing Rocks* is a research project about power relations in the mining industry, with case studies from Malmfälten in Sweden and Saskatchewan in Canada. The results were presented in video and sound installations, photographs, and serigraphs at Kiruna City Hall, 11–24 March 2017 and at Luleå City Library, 9–30 Sept. 2017. More at www.organizingrocks.org.

20 The work "Arctic Maritime Infrascapes" combines several approaches to present scientific research: video presentation, infographic poster and the art object "InfraCube." The prototype and scale model were prepared in collaboration with artists Stanislav Podusenko and Olga Lo. https://arcticinfrascapes.com/arctic-maritime-infrascapes.

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Poisoned Grounds: Toxic Discourse in Barbara Kingsolver's Fiction and Nonfiction

Abhra Paul and Vidya Sarveswaran

ABSTRACT

In his *Writing for an Endangered World* (2001), Lawrence Buell coins and defines the term "toxic discourse" as "anxiety arising from the perceived threat of environmental hazard due to chemical modification by the human agency" (31). Buell's concept of toxic discourse offers a framework and four topoi: "the shock of awakened perception," "a world without refuge from toxic penetration," "the threat of hegemonic oppression," and "gothicization" (35–42). Following this line of thought, the present paper addresses the intersection between ecocriticism and toxic discourse. Then it proceeds to explore how Buell's four topoi are presented in the works of American essay writer, scientist, and novelist Barbara Kingsolver, in *Animal Dreams* (1990), *Holding the Line: Women in the Great Arizona Mine Strike of 1983* (1989), *Prodigal Summer* (2000), the essay "In the Belly of the Beast" from the collection *High Tide in Tucson* (1995), and three essays, "A Fist in the Eye of God," "A Forest's Last Stand," and "The Patience of a Saint" from the collection *Small Wonder* (2003). Kingsolver's fiction and nonfiction present how human-induced chemical toxicity destroys the planetary ecosystem. This study examines how Buell's concept of "contaminated communities" is reinforced through Kingsolver's depiction of the copper mining community in Arizona or the small farms exposed to chemical hazards from using pesticides. Buell's tendency to "gothicize" toxicity resonates with Kingsolver's works presenting grotesque images of nuclear waste dump/fallout and industrial pollution, and present the "hegemonic oppression" of the mining corporation (Phelps Dodge Copper Corporation in the USA) or the government policies using nuclear warheads and agricultural chemicals. (AP and VS)

KEYWORDS: toxic discourse, Anthropocene, ecocriticism, chemical toxicity, environmental hazards, Barbara Kingsolver

Introduction

The increasing pollution and toxicity of land and air have led scientists and environmental studies scholars to describe this current era as a "new age of toxicity" (B. L. Walker xi). The new age of toxicity is effectively Anthropocene because of its permanent, planetary-scale alternations with intimate effects (Liboiron et al. 332). The publication of Rachel Carson's *Silent Spring* directed the reader's attention, over sixty years ago, toward the literature of toxicity portraying realistic and more crisis-oriented images of environmental hazards and disruption: "pollution of the total environment of mankind" (Carson 38). *Silent Spring* focuses on the textual representation of the contexts of twin toxic hazards—chemical pesticides and radioactive fallouts. Carson effectively fused the pre-existent pollution concerns of urban and industrial reformers with the ecological sensitivities of resource conservation and wilderness preservation (M. J. Walker 322–25). Following *Silent Spring*, a range of new fictional and nonfictional narratives emerged to frame what Lawrence Buell defines as "toxic discourse" (639). The corpus offers intriguing possibilities for ecocritics and environmental studies scholars to engage with issues and themes related to environmental/toxicity crises presented in literary texts. Buell's framework of toxic discourse, with an emphasis on the four topoi as postulated in his "Toxic Discourse" and *Writing for an Endangered World,* offers an interesting scope for studying the fiction and nonfiction texts of Barbara Kingsolver.

Given this background, this paper first addresses the connection between ecocriticism and toxic discourse, then it proceeds to study Kingsolver's works, particularly *Animal Dreams* (1990), *Holding the Line: Women in the Great Arizona Mine Strike of 1983* (1989), *Prodigal Summer* (2000), the essay "In the Belly of the Beast" in *High Tide in Tucson* (1995), and another three essays, "A Fist in the Eye of God," "A Forest's Last Stand," and "The Patience of a Saint" from the collection *Small Wonder* (2003).

Kingsolver is an evolutionary biologist, and her literary texts evidence how literature and science come together to address specific ecological issues and irresponsible environmental practices. Her fictional and nonfictional works are explorations that engage readers with individual stories and realistic viewpoints in narrations about toxic landscapes. These writings significantly contribute to contemporary literature on toxicity and present how human-induced chemical toxicity (such as copper mining, tobacco farming, insecticides/pesticides, nuclear waste, industrial pollution, and so forth) destroys the planetary ecosystem. Buell's notion of "contaminated/poisoned communities" and "realities of toxic

contamination" (35–42) corresponds to Kingsolver's portrayal of the copper mining community in the fictional village of Grace County in *Animal Dreams* or the women miners on strike against the Phelps Dodge Copper Corporation in *Holding the Line*. The dying small farms, such as the Widener farm in *Prodigal Summer*, are grappling with the chemical hazards of pesticide usage or the toxicity of plantation cash crop tobacco. Buell's "gothicization" finds an echo in Kingsolver's narratives, vividly depicting scenes of nuclear fallout, waste dumps, and industrial pollution in the essays of *High Tide in Tucson* and *Small Wonder*. Furthermore, the study sheds light on the pervasive influence of hegemonic oppression perpetrated by corporations like the Phelps Dodge Copper Corporation, or the fictitious Black Mountain Corporation, or government policies involving nuclear warheads and agricultural chemicals, among others.

Four waves of ecocriticism and toxic discourse: a theoretical overview

Ecocriticism as a literary theory coalesced in the 1990s. Cheryll Glotfelty, in *The Ecocriticism Reader*, defines it as the study of relationships between literature and the physical environment and states that ecocriticism takes an earth-centered approach (xviii). Additionally, Scott Slovic in "Ecocriticism: Containing Multitudes, Practising Doctrine" suggests that there "is no single, dominant worldview guiding ecocritical practice—no single strategy at work from example to example of ecocritical writing or teaching" (160), while ecocritical practices worldwide are continually revised and redefined by thousands of literary scholars. Ecocriticism emphasizes interdisciplinary theories and perspectives:

> In its numerous methods and forms—encompassing or intertwining with feminist approaches and nature writing analyses, animal humanities and biosemiotics, environmental justice and postcolonial studies, petrocriticism and "toxic discourse"—ecocriticism invites us to see how world and texts are connected, how they meet and eventually combine. (Iovino 107)

A number of ecocritics—including Buell, Glotfelty, Greg Garrard, Carolyn Merchant, Ursula K. Heise, Serenella Iovino, Serpil Oppermann, and Rob Nixon—are engaged with the study of theoretical perspectives and literature on toxicity as an interdisciplinary combination of humanistic discipline and science. For Garrard, for instance, "ecocriticism is unique amongst contemporary literary and cultural theories because of its close relationship with the science of ecology" (5). In his examination of the

trope of environmental pollution and toxic discourse in *Ecocriticism*, he also refers back to Rachel Carson and the evolving definition of pollution. Exploring further the concept of toxicity, he also discusses the human perception of risk and risk society (Beck) and Buell's perception of toxic discourse as a cultural genre (*The Future of Environmental Criticism*).

Buell uses the metaphor of waves to trace the steady development/evolution of ecocritical theories, recognizing the cross-fertilization between various disciplines and approaches. In *The Future of Environmental Criticism*, he marks the evolution of the first and second waves of ecocriticism. The wave metaphor is adopted from the waves of feminism (Glotfelty and Fromm; Slovic, "The Third Wave", "Editor's Note"). Buell, however, suggests *palimpsest* as a better analogy than the *wave*. He goes on to explain that the definitive map of environmental criticism in literary studies remains subtle, yet, distinct trend lines can be identified, indicating an evolution from a "first wave" of ecocriticism to a "second—or more recent, revisionist—wave."[1]

Slovic adds that "the waves do not simply end when a new wave begins" (5). For example, the first wave of ecocriticism (such as, for example, nature writing or ecofeminism) remains important even to the scholars of modern ecocriticism. However, Slovic, although he, similarly to Buell, prefers the idea of the palimpsest, finds the image of successive waves rolling ashore from the sea of ecocritical ideas more accessible than the palimpsest or layering of ecocritical trends (5). If we break down the four waves of ecocriticism based on Buell's work, we find that the focus of the first wave, from the 1980s to the present, is on nonfiction (nature writing), nonhuman nature or the wilderness, American and British environmental literature, and discursive ecofeminism. The second wave (Buell 17), from the mid-1990s to the present, referring to multiple genres (and green cultural studies), is multicultural, and focuses on local literature around the world, environmental justice, the urban and the suburban. Third-wave ecocriticism (Slovic "The Third Wave" 5), from 2000 to the present, puts multiple gendered approaches, material ecofeminism, and animality in its center. The fourth wave (Slovic "Editor's Note" 620–21), from 2008 to the present, emphasizes material ecocriticism, "trans-corporeality" (Alaimo), human-nature "symbiosis" (Karpouzou and Zampaki), "the environmentalism of the poor" (Nixon), and applied ecocriticism.

Tracing the trends of the four waves of ecocriticism and toxic discourse, we find a steady and distinct succession in the scholarship.

Historian Samuel P. Hays, in his *Explorations in Environmental History,* observes that writings on nature and conservation (in American environmentalism) from the early nineteenth century subtly address toxic discourse that may be included in the first and second waves of ecocriticism. Hays suggests that the growth of industrialization, rapid urbanization, and technological advances (the increased pollution rate, waste dumping, and contamination of soil, air, and water) made the countryside a site for dumping urban toxic wastes (164–65). Nature's subtle but blatant contamination gave environmental thinkers an impetus to reflect on large-scale degradation due to toxic substances. The first and second waves of ecocriticism include Carson's *Silent Spring* and early environmental writings like Aldo Leopold's *A Sand County Almanac: With Essays on Conservation from Round River*. Edward Abbey's *Desert Solitaire: A Season in the Wilderness* mentions industry polluting water bodies, prospecting, mining and pollution in urban places. The third and fourth waves shifted focus to toxic discourse and global aspects. Buell et. al observe that the intersection between scientific facts/findings and storytelling gains prominence in representing issues like chemical contamination and radioactive fallout. Writers, filmmakers, and science communicators document environmental contamination in their stories, plays, writings, and films and its consequences for humans and the natural world—ecocritics have investigated this rhetoric of toxic and radioactive pollution in detail (423).

In his *Writing for an Endangered World*, Buell defines toxic discourse as "anxiety arising from the perceived threat of environmental hazard due to chemical modification by the human agency" (31). He emphasizes that "the fear of a poisoned world is increasingly pressed, debated, debunked and reiterated" (30), and adds that toxic discourse challenges the traditional understanding of the environmental movement and insists on the interdependence of ecocentric and anthropocentric values (30–35). Buell, furthermore, elaborates that toxic discourse is hardly given the same attention as its chemical, medical, and legal aspects ("Toxic Discourse", 639). He claims that in literary and rhetorical studies, ecocriticism acts as the major impetus to engage with environmental issues. Ecocriticism devotes major attention to two "ethico-political commitments": the protection of the endangered natural world and the recuperation of a sense of how human beings have been reconnected with it (640). *Writing for an Endangered World* outlines four topoi of toxic discourse: "mythography of betrayed Edens" and "the shock of awakened perception"; "totalizing images of a world without refuge from toxic penetration"; "the threat of hegemonic

oppression"; and "gothicization" (35–42). To engage with these topoi, Buell begins with *Silent Spring*, which represents large-scale toxic poisoning: "an awakening to the horrified realization that there is no protective blanket" (36).

Buel points out in "Toxic Discourse" that the opening chapter of *Silent Spring* introduces one of the key discursive motifs. A town awakens to a birdless, budless, silent spring corresponding to the "rude awakening" to the "betrayed Eden." What he emphasizes is that contemporary narratives retell the rude awakening from simple pastoral to complex (647), losing the "rose-coloured lens of pastoral utopian innocence" (648). The concept of Eden is rooted in the romanticized version of pastoral poetry and nature writing of Thoreau and Muir. This model, as Buell explains, is often favored by ecocriticism, presenting "ecological holism to which acts of imagination have the capacity to (re)connect us" (45). Therefore, the first topos offers an adverse anthropocentric perspective, engaging us with the realities of toxic contamination. This disenchantment from the pastoral or the "green oasis" is accompanied by totalizing images of a world without refuge from toxic penetration (649). The second topos presents the contaminated or poisoned communities without any protective blanket against global toxification, exposure to hazardous waste or polluted air, and nuclear fear originating from the Cold War era. Anne McConnel echoes Buell in that the threat of toxic penetration draws attention to the lack of reliable boundaries to contain the spread of poisonous chemicals. Therefore, the environment emerges as an interconnected mesh without any safety or certainty (292). Carson's work propagates this sense of entrapment: "Every human being is now subjected to contact with dangerous chemicals, from the moment of conception until death" (Carson 24). The third topos is an important constituent of toxic discourse: the threat of hegemonic oppression and the danger of corporate greed. Buell explains that Carson has made clear in her work that the common people are victims of military, corporate, and government arrogance. Finally, the fourth topos of "gothicization" documents a movement towards horror and grotesque images of toxification/contamination. Buell states that toxic discourse montages into gothic or becomes lurid when the victim has no choice.

Literature of toxicity: an overview

Ecocriticism's recent engagement with toxic discourse includes a re-examination of a range of literary texts representing "situations of environmental risk" and "toxic bodies, polluted ecosystems, and the various

landscapes of risk in their multiple aspects" (Iovino 108). Later, Ursula K. Heise, in "Toxins, Drugs, and Global Systems: Risk and Narrative in the Contemporary Novel," considers this corpus as textual and visual representations of exposure to hazardous chemicals. She states that these narratives foreground the way contemporary novelists use chemical toxicity as a trope to dissolve the boundaries between body and environment, public and domestic spaces, harmful and beneficial technologies (747–48). Heise discusses DeLillo's *White Noise* and Richard Power's *Gain* as fictional engagements of the risk theory and this trope of toxicity. She observes that attention to toxic discourse and risk theory helps us to better understand the environmental crises presented in the literary texts on toxicity. Within this context, it is recognized that German sociologist Ulrich Beck's theory of risk society has become a significant perspective to examine the contemporary realistic study of environmental catastrophe. Risk theory explores the connection between humans and hazardous technological advances; it also highlights the threats associated with the production of toxic chemicals and nuclear power. These threats increase the risk of catastrophic events and disasters due to out-of-control technologies and environmental instability. Beck explicates that "[p]eople no longer correspond today with spirits residing in things, but find themselves exposed to 'radiation,' ingest 'toxic levels,' and are pursued into their very dreams by the anxiety of a nuclear holocaust" (Beck 14).

Toxic consciousness is treated in early literary texts as an environmental problem and concern. Cynthia Deitering's "The Postnatural Novel: Toxic Consciousness in Fiction of the 1980s" refers to waste accumulation and toxicity. In the "Introdcution" of *The Ecocriticism Reader*, Glotfelty maintains that Deitering finds contemporary novels to be littered with references to garbage, "a shift from a culture defined by its produce to a post-industrial culture defined by its waste" (xxx). Chemical/toxic/nuclear hazards have remained a dominant topic in literary works, fiction, nonfiction, and films in the 1990s and 2000s, as Ursula K. Heise claims in her book *Sense of Place and Sense of Planet*. She emphasizes that chemical pollution is a central issue in American environmentalism and, hence, is used as a crucial trope by writers and filmmakers. Works like Todd Haynes's film *Safe* (1995), Theo Colborn's book *Our Stolen Future* (1996), Sandra Steingraber's nonfiction account *Living Downstream* (1997), Stephen Zaillian's film *A Civil Action* (1999), Steven Soderbergh's movie *Erin Brockovich* (2000), and Susanne Antonetta's memoir *Body Toxic* (2001) engage with scenarios of toxic contamination and their consequences, with "the dual nature of

chemicals as toxins and medicines and the attendant fascination with altered physical and psychological states of various kinds have been a recurrent issue in American literature and culture of the last forty years" (Heise 160–61).

Terrell Dixon, in "The Literature of Toxicity from Rachel Carson to Ana Castillo," surveys the growth of toxic studies in the literary works of Carson, DeLillo, Terry Tempest Williams, Jane Smiley, Rudolfo Anaya, and Ana Castillo. Dixon notes that the creation and manufacture of toxic materials have significantly increased. Various authors' literary efforts to oppose these environmental degradations are multiplying and diversifying: "It is not surprising that we now have an important group of writers who fall into a grouping which should be called the daughters and sons of Rachel Carson" (256). Kingsolver is the latest addition to this group, as her fictional and nonfictional works resonate with these writers' creations. She can be designated as one of the daughters of Rachel Carson as her works focus on the contemporary literature of toxicity similar to these writers mentioned above. In *Animal Dreams*, *Prodigal Summer*, essays from the collections *High Tide in Tucson* and *Small Wonder*, and her journalistic writing *Holding the Line: Women in the Great Arizona Mine Strike of 1983*, Kingsolver presents how chemical toxicity has challenged both the ecosystem and human health and has become a significant detriment in the efforts to manage and protect the environment for the wellbeing of the planetary ecosystem. Her works seek to "imagine and communicate the Nixonian slow violence of the world that we inhabit, the haunting and invisible violence that operates beyond our view or on a scale that exceeds our sensory abilities" (Slovic "Cultivating an Ability to Imagine" 159). Therefore, such writings present a confluence of scientific facts and the rhetoric of cultural studies: the basic proposition of ecocriticism, "an outcome of an interaction between ecological knowledge of nature and its cultural inflection" because "environmental problems require analysis in cultural as well as scientific terms" (Garrard 14).

Toxicity matters: Kingsolver's fiction and nonfiction—the shock of awakened perception

Kingsolver's *Animal Dreams* recounts the protagonist of the novel, Codi or Cosima's return to her native country, to a small rural town, Grace County. She describes the *poisoned grounds* of Grace County polluted with the chemical extracts, sulfuric acid, from the copper mine, the Black Mountain Mine. Based on Kingsolver's freelance journalistic writing *Holding the Line*, a

collection of interviews with miners and their families, particularly the women who face the strike challenge, the novel echoes with the toxic pollution of the environment caused by mining in Arizona. Linda Wagner-Martin emphasizes the essential connection between *Holding the Line,* which is also an account of the strike against Phelps Dodge Copper Corporation from June 1983 to December 1985, and *Animal Dreams*:

> Kingsolver had learned well how to use oral history recordings from her research during the Phelps Dodge Copper Mining strike in the Arizona towns of Ajo, Morenci, Douglas, and Clifton. It was that non-fiction account of the tough women who "manned" the various strikes that had led to her finding a good agent: throughout *Animal Dreams* she drew from her years of covering that hopeless strike effort where the orchards of pecan, plum, and apple were poisoned out of existence by the sulfuric acid used in the copper mines' leaching operations. (63)

In *Animal Dreams*, the river is contaminated, and the ground is infertile. Grace County, although a mining town, is set in a fertile valley. Therefore, people depended on their orchards for their livelihood, but now all the fruit trees are dying because of the industrial expansion in the area, rendering the locals helpless: "they're getting gold and moly out of them tailing piles. If they weren't, they wouldn't keep running the acid through them" (Kingsolver 64). Mary Allen Snodgrass comments that the text depicts the slow strangulation of Grace, Arizona, and the willful acidification of the river from the leachate of copper tailing (33). The slow death of a fertile valley corresponds to the rude awakening to toxic realities—in line with Buell's first topos. Kingsolver describes the town as an idyllic, magical place, an Eden which has its mythical origin related to the blue-eyed Gracela sisters, and then there is the slow, rude, and desperate awakening to the realization that there is "no protective environmental blanket" (Buell, *Writing for an Endangered World* 36): "I tried to include all the things that made Grace what it was: the sisters coming over with their peacocks; their blue-eyed descendants planting an Eden of orchards in the idyllic days before Black Mountain; the confetti-colored houses and stairstep streets—everything that would be lost to a poisoned river" (Kingsolver 221). The connection between the imaginary poisoned grounds of Grace County in *Animal Dreams* and the real mining town and community in Arizona presents what Buell describes as "disenchantment from the illusion of the green oasis" (*Writing for an Endangered World* 38). In

the fictional account, the contaminated landscape, river, and the "poisoned community" (35) are contrasted with the Navajo tribal land, Santa Rosalina, representing pastoral settings and values, to reinforce the sense of the poisoned grounds of Grace. Kingsolver echoes Rachel Carson as she describes the imaginary location, which is similar to the nonexistent "no-birds town" described in *Silent Spring*. Kingsolver explains that Grace County, the railroad depot, and Santa Rosalia are imaginary, but "other places, and crises, in the book, are actual" (*Animal Dreams* 4). Similarly, in her *Fable for Tomorrow*, Carson insists that the no-birds town does not exist, "but it might easily have a thousand counterparts in America or elsewhere in the world" (Carson 3). Wagner-Martin claims that "[u]nreal as Grace may seem to be at times, what is real is pollution, waters that have little ability to bring nourishment to trees and plants (and people), and a kind of lethargic disdain for the capacity of human beings' power to change the corruptible landscape" (54).

In *Holding the Line*, Kingsolver presents the reality of the open-pit copper mine pollution turning the land dead and San Francisco River water into "vitriol":

> The Castanedas and their neighbors resent the pollution from the mine. Trace copper and other minerals can be extracted from mining waste by means of a leaching process wherein mounds of the waste-sometimes whole hillsides are saturated with a sulfuric acid solution. The runoff contains dissolved copper in the form of copper sulfate, a blue compound that is deadly to most living things. The sulfate should be recovered and processed, but according to Maggie, the waste stream Phelps Dodge puts into the San Francisco is deep, telltale turquoise. She cried indignantly, "They're dumping that into our river!" (69)

The novel *Animal Dreams* describes similar conditions of the river in imaginary Grace County. Codi explains to the members of the Stitch and Bitch Club, a club formed by the women who are protesting and organizing demonstrations against the annihilation of their environment, how the river water is turned into vitriol by the toxic waste from the mine. Black Mountain Mine has been running the clear, corrosive, water-miscible acid—sulfuric acid, or blue vitriol through their tailing piles to recover extra copper. Usually, it is used to kill rats and pond algae. The river is full of straight sulfuric acid: "Your trees knew all this way before we did. Watering them from the river is just like acid rain falling on them, if you've heard of that. The acid-rain problem here in the West comes mostly from mine

smelters. It's the same acid, one way or the other. Sulfuric acid" (177). The government EPA (Environmental Protection Agency) is unconcerned about this environmental degradation in Grace County. However, *Holding the Line* documents that Phelps Dodge was fined for violating the Clean Water Act and the EPA agreement because of the growing acid rain problem and sulphur dioxide emissions at their Morenci smelter.

The pressing environmental concerns related to metal mining also apply to copper mining. Such mining operations physically disturb landscapes because of the mine workings, waste rock, and tailings disposal areas. Mining also increases the acidity of soils, making soils toxic to any vegetation, and such poisonous soils are a source of metals released to the environment. It also degrades surface and groundwater quality due to the oxidation and dissolution of metal-bearing minerals. It also accelerates air-borne dust and other emissions, like sulphur dioxide and nitrogen oxides from smelters, thus polluting the atmosphere and surrounding areas. Kingsolver focuses on ecological degradation by reconfiguring toxic stories on a human scale. *Animal Dreams* resonates with all the severity of toxic concerns related to copper mining. The river pollution, the poisoned and infertile land, the loss of trees and fruit orchards, and the natural vegetation of the fictitious Grace County present the "pastoral betrayal" (Buell, *Writing for an Endangered World* 39). A similar rhetoric of pastoral betrayal is presented in "The Patience of a Saint" from *Small Wonders* that recounts Kingsolver's visit to San Pedro, a natural habitat protected since 1988 as the San Pedro Riparian National Conservation Area (Kingsolver 43). The image of the mythography of Eden is revoked in Kingsolver's depiction of San Pedro and her kids' happiness to "dance barefoot between sandbars, believing they have found the Secret Garden" (42). The Secret Garden is unquestionably an allusion to Eden, or to Buell's concept of "simple pastoral," and the contrarian vision of "complex pastoral" as well as to "retelling narratives of rude awakening from simple pastoral to complex" (*Writing for an Endangered World* 37): "But now, as the Sunbelt booms, farmers and environmentalists find their voices equally drowned out by a new, louder demand from urban consumers" (Kingsolver 46). The rich biodiversity—for example, the Huachuca leopard frog, the brush-prowling ocelot, and the bright-feathered birds that thrive in this hostile expanse of land across nearly half the river's hundred miles and fifty-eight thousand acres of the corridor—is threatened by the boomtowns whose economies lived and died because of copper mining. The toxic liquids are leaked into the river, leading to the decimation of aqua species.

Totalizing images of a world without refuge from toxic penetration

Kingsolver's essay "In the Belly of the Beast" from *High Tide in Tucson* narrates her visit to the atomic warhead and missile museum south of Tucson, the Titan Silo. She begins it by asking: "What could a person possibly learn from driving down the interstate on a sunny afternoon and descending into the ground to pursue the technology of nuclear warfare?" (208), then goes on to describe the defunct Titan II missiles and the nuclear warheads waiting underground quietly, "available on a moment's notice" (218). What seems inconceivable to Kingsolver is the potential holocaust: the lethal vapors that may escape through the vents during miscalculations or accidents can devastate the community of retiring folks just downhill. She suggests that the main reason behind the Pentagon's forced decommission of the Titans is the potential stupendous hazards to the US public. A group of civilian physicists in the 1960s stated that one possible explosion at a single silo surrounding Tucson would trigger a chain reaction among other Titans, destroying the city immediately. Kingsolver ends her essay by describing her trip to another bomb museum in Hiroshima, housing images from the nuclear disaster in 1945: "every nuclear weapon ever constructed was built for the purpose of ending life, in a manner so horrific it is nearly impossible to contemplate" (219). Her conclusion reiterates the anxiety of "a nuclear holocaust" (Beck 14) and the threat of chemical hazards, the second topos that Buell postulates as "totalizing images of a world without refuge from toxic penetration" (*Writing for an Endangered World* 38). Kingsolver evokes an analogous image as she describes the dumping grounds in Mexico in her essay "A Forest's Last Stand" in *Small Wonders*. The fields are dumping grounds for DDT and other toxic wastes and have the planet's most "chronically poisoned air" (78). In *The Anthropocene and the Humanities*, Carolyn Merchant describes the increase in toxicity and pollution due to uncontrolled waste dumping, industrial chemicals that pollute the ground and surface water, acid rain from coal-burning smokestacks, and smelting of metal mining. These all cross national boundaries, threatening the health and survival of human and nonhuman nature (150–52).

On the contrary, in the essay "A Forest's Last Stand," Kingsolver approvingly describes the ecological living of the Guatemalan refugees in the Mexican villages: "No snaking backpack sprayers will *psssst* in this Garden of Eden" (81). She visits the Mexican village, Nueva Vida, or "New Life", which she defines as the "Garden of Eden". The depiction of the

Mexican refugee village in the so-called dumping ground of the US represents what Buell terms as "part of an escape from the city to a rural idyll" (*Writing for an Endangered World* 37). Carmen Salgado, her host, tells her that the villagers (the Chol, Tzeltal, and other groups fleeing from Guatemalan repression) are not dependent on chemical fertilizers and pesticides: "Their reliance on organic methods of pest control and soil amendment allows these farmers self-sufficiency, while also ensuring that their notoriously poor tropical soil will improve with each crop, rather than deteriorate" (81).

The image of the "poisoned community" and the second topos (Buell, *Writing for an Endangered World* 35, 38) continues in *Prodigal Summer*, bringing in the context of increased use of pesticides/artificial fertilizers and growing cash crops like tobacco. Kingsolver explains in detail that tobacco farming and the use of insecticides promoted by the local US Agricultural Extension Service has exposed the southern Appalachian farming community to risks caused by chemical pollution of the environment. Tobacco farming leaves the inhabitants of the fictional town Egg Fork exposed to cancer. *Prodigal Summer* presents three interconnected plots: "Predators," "Moth Love," and "Old Chestnuts." "Moth Love" is the story of Lusa Landowski, the lepidopterist. She marries the farm owner, Cole Widener, and moves to this farming community with him. Cole's unexpected death leaves Lusa adjusting to her in-laws and the dying farm.

Suzanne W. Jones points out that the Widener farm is on the verge of extinction because of the governmental policies regarding tobacco, the high price of herbicides and insecticides, and the farmers' resistance to change. But the farmers of Zebulon County, including the Wideners, fail to find any other profitable legal crop. Besides, Cole's openness to new agricultural experiments (growing bell peppers and cucumbers) yielded no results (Jones 85). Cole's sisters want to plant tobacco on his farm property, but Lusa rejects this option as she considers tobacco "a drug": "We're sitting on some of the richest dirt on this planet, and I'm going to grow drugs instead of food?" (*Prodigal Summer* 105). Like Cole, she decides to raise goats instead. The agricultural practice of growing tobacco and the family farms have a different context in the novel. An alternative and more sustainable way of farming, such as goat rearing, solves the farm's weed growth problem and is a more environmentally friendly way of agriculture to save the dying farm. However, Kingsolver subtly hints at the environmental and human health risks of growing such crops that cannot be ignored. Lusa is well aware of these risks: "Why plant more tobacco

when everybody's trying to quit smoking? Or should be trying to, if they're not already. The government's officially down on it, now that word's finally out that cancer's killing people. And everybody's blaming *us*" (*Prodigal Summer* 106).

The practice of tobacco growing reduces the fertility of the soil rapidly as well as increases soil depletion. Forests are cleared for this agricultural practice, and deforestation contributes to greenhouse gas emissions, climate change, and widespread biodiversity loss. It is also associated with land degradation or desertification in the form of soil erosion, reduced soil fertility and productivity, and the disruption of water cycles (WHO Studies). Kingsolver emphasizes the environmental and health impacts associated with tobacco farming (such as Lusa's perception of the cash crop as a "drug") in her fictional storyline.

The third plot, "Old Chestnuts", presents two elderly neighbors, Nannie Rawley and Garnett Walker, and their opposing views on using pesticides. Walker sprays his chestnut trees with chemicals, pesticides, and herbicides to kill the unwanted weeds and insects, which affects the organic fruits in Nannie's orchard. Their exchanges and letter writing, in addition to providing important information on toxic pollution, are illustrative of the difference between anthropocentric and ecocentric thinking. Nannie has declared war on the county's Two-Four-D, the Sevin dust, and other insecticides Garnett sprays on his chestnut seedling trees to keep them from the army of Japanese beetles (*Prodigal Summer* 86). The reference to *Silent Spring* and Carson is prominent in *Prodigal Summer*. Apart from direct allusions to Carson—Nannie's daughter is named Rachel Carson Rawley; her cross-bred organic fruit is patented under the name "Rachel Carson"—the novel is replete with Carson-inspired "orations about keystone predators, evolution, and broad-spectrum insecticides" (Jones 94). The conversation between Nannie and Garnett evidences such a connection. Nannie's reference to dead songbirds, the use of manmade chemicals, and their effect on the environment and humans is precisely what Carson's *Silent Spring* envisions:

> Garnett felt a pang of guilt about the shingles but let it pass. "It's the middle of July," he said. "The Caterpillars are on my seedlings like the plague. If I didn't spray, I'd lose all these year's new crosses".
> "See, but you are killing all my beneficials. You're killing my pollinators. You are killing the songbirds that eat the bugs. You're just a regular death angel, Mr. Walker." (*Prodigal Summer* 273)

The chemicals, though only aimed at eliminating targeted weeds or pests, kill both good and bad insects. These pesticides are "biocides" and are "substances of incredible potential for harm" (Carson 25). Kingsolver details the dangers of pesticides on beneficial insects in her essay, "A Fist in the Eye of God" (*Small Wonders*). She mentions the adverse effects of using pesticides on monarch butterflies. Human technological advances for genetically modified food and crop yielding are producing unforeseen consequences. She states that genetic engineers have spliced a bacterium, *Bacillus Thuringensis*, into a corn plant. This germ causes caterpillars' stomachs to explode but does not harm humans, birds, or ladybugs. It is one of the most useful pesticides ever developed in human laboratories. This bacterium, however, is pushing Monarch butterfly population into extinction risk as it may explode the stomach of any butterfly larva. There are many other reasons for this decimation of the populations of monarch butterflies, but the destructive role of an engineered pesticide of these potentials is undeniable to any reasonable human imagination. Kingsolver echoes Carson when she emphasizes the limitation of human imagination about their responsibility for being the destructive force against nature:

> Most people lived so far from it, they thought you could just choose, carnivore or vegetarian, without knowing that the chemicals on grain and cotton killed far more butterflies and bees and bluebirds and whippoorwills than the mortal cost of a steak or a leather jacket. Just clearing the land to grow soybeans and corn had killed about everything in half the world. Every cup of coffee equalled one dead songbird in the jungle somewhere. (*Prodigal Summer* 323)

The threat of hegemonic oppression

Kingsolver presents the third topos, "threat of hegemonic oppression" (Buell, *Writing for an Endangered World* 41), of corporate power on the poisoned community: the Black Mountain Mine in *Animal Dreams* and Phelps Dodge Copper Corporation in *Holding the Lines*. She tells of the women miners who "kept that mine going" while "hav[ing] to stand and collect mud and water and put it in a bucket for eight hours straight" (*Holding the Lines* 3), and also of the practices of the mining corporation and the history of the mining industry. She encapsulates the reality of "corporate greed" or "military, corporate and government arrogance" (Buell 40, 41): "In a place a few hours' drive from where I live, the government, the police,

and a mining company formed a conspicuous partnership to break the lives of people standing together for what they thought was right" (Kingsolver, *Holding the Lines* xxii). The images of the government using nuclear warheads in "In the Belly of the Beast" highlight a significant environmental threat. In "A Forest's Last Stand," the dumping of toxic wastes in Mexico illustrates a form of waste imperialism.[2] Additionally, government agricultural policies to promote herbicides/pesticides in *Prodigal Summer* or the results of genetic-engineering, carefully preserve and reinforce an "us-versus-them dichotomy without absolving us of our acquiescence and complicity as chemical consumers—even as *Silent Spring* makes clear that ordinary citizens are victims of military, corporate and government arrogance" (*Writing for an Endangered World* 41).

Gothicization

Kingsolver's works demonstrate several markers of the fourth topos, "gothicization," which, as Buell points out, becomes most lurid when the victim has never had a choice (*Writing for an Endangered World* 42). Many communities are helpless victims of toxic dumping and diseases as a consequence of living too close to industrial wastes, or of exposure to toxicity, such as the mining community of Arizona, or the fictional Grace County and its small farming community. Kingsolver foregrounds images of toxic poisoning and disease rather than focusing on the "lurid." For example, her narrative description of the nuclear fallout in the bomb museum in Hiroshima presents grotesque images of destruction and toxic contamination in "In the Belly of the Beast". She describes the exhibits: melted watches, the brass Buddha figurine with a hole in place of the face, and the white eyelet dress of a schoolgirl named Oshita-chan, who was half a mile from the hypocenter of the blast. Kingsolver concludes that the horrifying missile museum should shake us out of our quotidian lives: "What they left out of the Titan Missile Museum was in plain sight in Hiroshima. Not a soundtrack with a politically balanced point of view" (218).

"Gothicization" is more evident in Kingsolver's *Holding the Lines*, as she describes the "arsenic holes" in the Morenci. The miners wear protective clothing (paper coveralls) and respirators, but still, they are exposed to the arsenic fumes. The depiction resonates with "the Virgilian mode" as explained by Buell in "Toxic Discourse" (654). Buell quotes Eric Homberger in *Scenes from the Life of a City: Corruption and Conscience in Old New York* when he refers to "the guided tour of the underworld" slums that

are "the home of lost souls" (654). Kingsolver's depiction of the "arsenic holes" in the Morenci are reminiscent of this Virgilian mode:

> Both Margaret and Arlene have worked in the "arsenic holes". "You wear a respirator", Margaret said, "but even with the respirator I'd go home feeling sick every day. It doesn't protect you. I felt like vomiting all the time". (Lung damage from sulfur dioxide and arsenic fumes in the smelter and silica in the pit is the worst slow killer of miners in this type of operation.) "My skin is green where the arsenic got on me, because sometimes the paper would tear." (81)

Conclusion

Buell defines "toxic discourse" as the anxiety arising from perceived environmental hazards. He outlines four topoi: the shock of awakened perception; a world without refuge from toxic penetration; the threat of hegemonic oppression; and gothicization. Kingsolver's toxic narratives are explorations of how toxicity is perceived and made sense of, while Buell's toxic discourse offers a useful lens through which to read Kingsolver's writings by mobilizing the narrative to make the impact of environmental toxins intelligible (Buell et al. 423). Kingsolver's fiction and nonfiction form a series of toxic encounters and hegemonic narratives that reveal the destructive impact of chemical toxicity on ecosystems. These stories are unique pieces of an integrated mosaic forming a bigger picture: stories of contaminated communities, the slow impact of chemical contamination and cross-boundary imagination of a future toxic world. Kingsolver portrays the copper mining community in the fictional Grace County depicted in *Animal Dreams*, or in her interviews of the women miners protesting against the Phelps Dodge Copper Corporation in *Holding the Line*. The dying small Widener farm in *Prodigal Summer* is struggling with the cultivation of toxic cash crops or drugs like tobacco as two ageing neighbors debate the hazards posed by pesticides. These writings present the far-reaching impact of hegemonic oppression of corporations such as the Phelps Dodge Copper Corporation, as well as of military and/or government arrogance in implementing policies entailing the deployment of nuclear warheads. Kingsolver's concern is evident in her vivid descriptions of nuclear fallout, waste dumps, and chemical pollution causing the extinction of nonhuman species, as found in the selected essays from *High Tide in Tucson* and *Small Wonders*. They engage readers with their poisoned, contaminated landscapes, intense anxiety over the risk and consequences of toxic fallouts, perceptions

and narratives of individuals, and, especially, their author's deep understanding of living in the Anthropocene as a biologist and a novelist.

National Institute of Science Education and Research, Bhubaneswar, India
School of Liberal Arts, Institute of Technology, Jodhpur, India

Abhra Paul is a Postdoctoral Fellow at the National Institute of Science Education and Research (NISER), Bhubaneswar, an Off-Campus Center of Homi Bhabha National Institute, India. She completed her PhD at the Indian Institute of Technology, Jodhpur, in 2021. She has published her papers in many reputed international and national refereed journals and edited volumes. Her research areas are English Literature, American Literature, South Asian Literature, Culture Studies, Blue Humanities, the Anthropocene, and Environmental Humanities.

Vidya Sarveswaran is an Associate Professor at the School of Liberal Arts at the Indian Institute of Technology, Jodhpur, India. She was a Fulbright Fellow from the University of Nevada, Reno (2009) and a Rachel Carson fellow from the Rachel Carson Centre for Environment and Society in Munich (2016). Her research and teaching focus on Literary Studies, Environmental Humanities, Blue Humanities, Cultural Histories of Disasters, and The Anthropocene to name a few. Vidya has co-edited four books: *Ecoambiguity, Community, and Development: Toward a Politicized Ecocriticism* (Lexington Books, 2014), *Ecocriticism of the Global South* (Rowman & Littlefield, 2015), *Ecocriticism and Environmental Communication* (Routledge, 2019), and *A Bloomsbury Handbook of Medical Environmental Humanities* (Bloomsbury, 2022). Vidya is passionate about eco-documentary film making and her debut film *Under Another Sky* was released in 2020.

Notes

1 This first-second wave distinction is not a neat, clear-cut succession; many currents initiated by early ecocriticism persist strongly, while second-wave revisionism often builds upon and contests its predecessors (*The Future of Environmental Criticism* 17).

2 For further reading, see Summers.

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Oddly Radical: Environmental Virtue Ethics in Simak's *Way Station*

Jeffrey M. Baus

ABSTRACT

This essay reconsiders Clifford Simak's *Way Station* as a nuanced exploration of environmental virtue ethics, challenging the conventional view of Simak's ideology as conservative. It argues that Simak critiques anthropocentrism, including that in Aldo Leopold's "Land Ethic," by advocating for a more authentic ecocentric perspective. Through close analysis, the essay examines how Simak integrates ethical considerations into his portrayal of the ecosphere and his characters' responses to it, emphasizing the intrinsic value of all beings. Additionally, it explores Simak's anti-anthropocentrism and alignment with ecofeminism, underscoring his preference for non-human entities. The essay also delves into Simak's empathy for the "other," illustrating how he promotes environmental justice and respect for all beings, irrespective of ability, beauty, or corporality. By illuminating Simak's environmental virtue ethics, this essay contributes to a deeper understanding of how his pastoral science fiction shapes environmental consciousness and promotes ethical engagement with the natural world. (JMB)

KEYWORDS: environmental virtue ethics, environmental justice, ecocentrism, anti-anthropocentrism, pastoral science fiction. ecocriticism.

While Golden Age science fiction (SF) often embraced anthropocentric techno-utopianism, the works of Clifford D. Simak challenged this dominant trope by introducing an ecocentric pastoralism to the genre. This seeming contradiction of pastoral SF and the advocacy of "old-fashioned virtue and wisdom" such as low-impact technology and the "galactic brotherhood," was argued by several critics as the reason for Simak's dismissal as "oddly conservative [for a] science-fiction writer" (Pringle 21). However, contrary to Pringle's assessment, being labeled as "an enemy in the camp of progress" does not make Simak less of a radical, only more of one (21). Simak's advocacy for ecological values and pastoral themes is a deviation from the perceived trajectory of technological "progress" within the genre at the time, and deeper analysis reveals that his seemingly

counterrevolutionary approach, moving beyond the reductive "conservative" label, presaged the core tenets of twenty-first-century environmental ethics and ecofeminism.

Solidifying Simak's position as an environmentally forward-thinking writer, whose writing career, spanning from 1928–1987, necessitates an examination of the dominant environmental philosophies prevalent during his time. Christopher Cokinos employs a historical approach to Simak's pastoralism, aptly illustrating the parallels between Simak's *Time and Again* (1950) and the ecocentric principles of Aldo Leopold's "Land Ethic" outlined in his *A Sand County Almanac* (1949). However, Cokinos also implies that Simak surpasses these initial manifestations of environmentalism, presaging a "more sophisticated and environmentally engaged science fiction" (133), although he does not explicitly detail how this transcendence is achieved. An example of this sophistication, surpassing Aldo Leopold's Land Ethic, would be Simak's 1962 Hugo Award-winning novel, *Way Station*. In this novel, Simak effectively demonstrates his environmental virtue ethics by advocating for ecocentrism, anti-anthropocentrism,[1] and empathy for the "other," thereby aligning his work with twenty-first-century environmental ethics.

This essay unfolds in five sections to illuminate Simak's environmental virtue ethics as portrayed in *Way Station*. The first section establishes a critical context by examining Aldo Leopold's anthropocentrism, the human-centered worldview that Simak challenges in the novel. Following this, the analysis shifts to Simak's environmental ethics, exploring how he integrates ethical considerations into his representation of the ecosphere. The subsequent section delves into Simak's ecocentrism, drawing on specific examples from *Way Station* to illustrate his advocacy for a nature-centered perspective.[2] The fourth section will discuss Simak's anti-anthropocentrism, demonstrating his opposition to human-centered ideologies, and his alignment with ecofeminism and preference for non-human entities. The final section will explore Simak's empathy for the "other," showcasing how he fosters environmental justice and respect for all beings, irrespective of ability, beauty, or even corporality.

Leopold's anthropocentrism

To fully appreciate Simak's approach as innovative, it is instructive to first examine the environmentalism of Aldo Leopold, a seminal figure in environmental ethics in comparison. His *A Sand County Almanac* (1949) is an early example of environmental virtue ethics. Leopold defines the Land

Ethic as a principle that upholds the "integrity, stability, and beauty of the biotic community" (*Sand County* 211). In the Land Ethic, ethical consideration is extended beyond humans and is generally considered ecocentric, however, it is not immune to critiques of anthropocentrism. Erich Fromm contends that notions such as "integrity" or "wholeness" are inherently subjective, residing "in the mind of the beholder" and contingent on their chosen perspective (46). He views perception of integrity as "purely conventional moments of understanding," rather than objective attributes of "reality" (46). Fromm further problematizes the concept of a definitive "community" by questioning the feasibility of definitively identifying an entity's essential characteristics, asking "how can anything be proclaimed to be a system or whole" if its boundaries are subjective and malleable (46)? Simak, in contrast, frequently uses protagonists who are moral yet simple individuals, aware of their limitations in understanding the fullness and the perceived integrity of the world. This humility, a refusal to resort to convenient reductionism, aligns with the ecological virtue of openness (Frasz).

Leopold's second concept in his Land Ethic, stability, is also anthropocentric as it references a human sense of time (Fromm 47). However, in the context of the ever-changing ecosystem and physical universe, "stability" is a short-sighted illusion (Botkin). Simak often draws attention to the limited human perspective of time in relation to the physical world.

The third concept in the Land Ethic, beauty, often seen as culturally determined and thus anthropocentric, significantly influences human interactions with the environment. This influence is particularly evident in ecoaesthetics, where subjective and culturally-infused perceptions of "natural beauty" guide human evaluations of the natural world.

Leopold, while refraining from a formal definition, acknowledges the subjectivity of beauty in his concept of "aesthetic competence" (*Round River*, 59–60). This suggests that one's aesthetic judgment, like one's ethical conscience, can be well or poorly formed. This underscores the potential problems in employing an anthropocentric aesthetic lens in environmental ethics and suggests that aesthetic judgments are contingent upon individual and cultural definitions of goodness and virtue.[3] As will be shown, while cognizant of the dilemma, for Simak, human perceptions of beauty are irrelevant to ecological value, emphasizing the intrinsic worth of the natural world.

Leopold's approach, while influential, ultimately fails to move beyond the anthropocentric (see also Mylius). Unlike Leopold's aspirational goal of "thinking like a mountain" (*Sand County* 123), which implies an impossible degree of nonhuman understanding and appropriation of nature's perspective, Simak maintains the radical alterity and inherent unknowability of the natural world in its entirety. This analysis sets the stage for a deeper examination of Simak's moral ecology, which aligns more closely with current discourse in environmental ethics.

Simak's Moral Ecology

Way Station is set in a context that is disconcertingly familiar. The narrative unfolds in a world where animal habitats are obliterated, environments are ravaged, lives are forfeited, and the simple, self-sustaining lifestyle of living off the land is but a distant memory. Moreover, the world teeters on the brink of nuclear war, a consequence of the short-sighted machinations of its leaders. While the use of nuclear weapon proliferation and governmental incitement to war as a plot device is not novel, *Way Station* offers a poignant critique of anthropocentrism when examined through the lens of environmental virtue ethics (EVE).

EVE is a branch of environmental ethics that recognizes the connection between human moral character and its effects on the environment. It seeks the thriving of both the individual and the ecosystem through the development of habits that make for a healthy, fulfilling life. As Sandler articulates, EVE

> involves developing a proper understanding of the human–nature relationship, identifying the goods and values that are part of or emerge from that relationship, determining the norms (rules/principles) that those goods and values justify, and applying those norms to generate guidance on environmental issues and interactions. ("EVE" 1665)

Within the context of *Way Station*, this ethical approach illuminates the narrative's exploration of human character and the impact on the environment, underscoring the novel's cultivation of virtues that promote ecological harmony and sustainability.

It is crucial to emphasize that the evaluation of Simak's work in terms of promoting EVE should not be contingent upon scientific fidelity. The cultivation or advancement of environmental consciousness is contingent upon the relationships forged between the characters and their

environment as depicted in the narrative, rather than the veracity of the described environments and the creatures inhabiting them. Furthermore, it is important to recognize that anthropomorphism and ecocentrism are not mutually exclusive concepts (Moore, *Ecology*). Even in children's fables and fantastical tales, which often feature talking animals and anthropomorphic robots driven by human desires, emotions, and motivations—elements that Simak frequently incorporates in his fiction—the essential virtues necessary for an environmentally conscious ethics, such as "reverence, humility, responsibility, and care," are effectively conveyed (O'Riordan 1).

Critics of Simak's ecological vision such as John Dean have failed to recognize the ecocentric potential inherent in pastoralism, influenced by Raymond Williams's critical assessment of pastoral in his seminal work *The Country and the City* (1975). Dean's critique, which laments the absence of cats in Simak's dog and robot stories (in *City*), is fundamentally incongruous (Dean 75). However, it does serve as a representative example of the unreasonable expectations of realism held by Simak's detractors, as well as their aversion to the seemingly "unproblematic" nature of pastoral plots. Simak's fable-like narrative style, marked by simplicity and the utilization of pastoral irony (especially evident in *City*), is entirely consistent with the pastoral mode, albeit not necessarily with SF. As Robert Silverberg admits, "We misjudged Simak, mistaking his kindly, gentle manner for a bland, nostalgic, superficial lament for a lost rural America. . . . But . . . he had a clear view of the darkness that lay beneath the human surface" (7). This darkness that Simak critiques is, among other things, anthropocentrism and vice. Therefore, Simak's engagement with the pastoral mode, even when read through a critical lens, ultimately fosters an ecocentric perspective by prompting reflection on the relationship between humanity and the natural world, challenging anthropocentric assumptions in a manner that transcends the limitations of SF conventions.

This broad environmental ethic found in Simak's stories promotes "*environmentally* virtuous characters" Treanor envisions (186). Simak's pastoralism, often overlooked and mischaracterized by critics, is fundamentally ecocentric (Cokinos 149–50). By portraying characters who embody environmental virtues, Simak's fiction effectively contributes to the cultivation of environmental consciousness and the promotion of ethical behaviors in relation to the environment. Van Wensveen's assertion that "even though virtue ethics may have acquired an image of conservative, a virtue ethic based in the lived discourse of the environmental movement could have surprisingly radical effects" ("Emergence" 28) is particularly

relevant here. Therefore, Simak's engagement with these themes should be recognized as an indication of his radical EVE, rather than a sign of conservatism.

Ecocentrism

Way Station opens with a description of the "tortured earth" after the American Civil War. The torturer is man, whose pride and ignorance inevitably lead to violence, destruction, and exploitation, causing war and destruction of the environment. The protagonist, Enoch Wallace, takes solace in walking home after the war like a pilgrim. "Wallace did not hurry. He walked as if he had all the time there was. And he stopped along the way to renew acquaintances with old friends of his—a tree, a squirrel, a flower" (13). The opening chapter immediately sets forth its ecocentric perspective, emphasizing the time it takes to reestablish the relationship between Enoch and his environment. Simak frames the narrative of the novel by illustrating the horrors of the problem (anthropocentrism and war) and by providing us with an answer (non-violence and recognition of the interconnectivity of all living things).

Ecocentrism here represents "the perspective that the ecological community itself, inclusive of its abiotic and biotic constituents, possesses intrinsic value or inherent worth in addition to its usefulness or instrumental value for human purposes" (Callicott 49). In an ecocentric worldview, animals, plants, and all forms of life on the planet are deserving of ethical consideration because of their mere existence, their intrinsic value, not because of their utility or aesthetic value to humans. Empathy is the reciprocal virtue of ecocentrism. "'[Ecocentrism] argues for low impact technology (but is not anti-technological); it decries bigness and impersonality in all forms . . . and demands a code of behavior that seeks permanence and stability based upon ecological principles of diversity and homeostasis'" (quoting Timothy O'Riordan, Moore, *Ecology* 5–6). This "code of behavior" is at the core of environmental virtue ethics and the central tenets of this code are presented in Simak's work through the actions of the characters (moral choices propelling the plot) and through descriptions within the narrative that focus the reader's attention on ecocentric concepts.

One such moral choice arises when Enoch is faced with a decision: he must either allow world governments to persist on their trajectory towards nuclear annihilation, or grant permission to the extraterrestrial beings from the Galactic Central—who constructed the way station—to

'reset' the human population, thereby relegating them to a pre-technological state of "stupidity" (*Way*, 145). As Enoch considers this option, his reasoning is entirely environmentally focused:

> But would it, bad as it might be, be as bad as war?
> Many would die of cold and hunger and disease (for medicine would go the way of all the rest), but millions would not be annihilated in the fiery breath of nuclear reaction. There would be no poison dust raining from the skies and the waters still would be as pure and fresh as ever and the soil remain as fertile. (148)

The prospect of preserving the skies and waters from contamination by nuclear fallout holds greater value than the loss of human life resulting from a deficiency of medicine, technology, and knowledge. Such losses, accumulated over millennia, would far exceed the fatalities caused by the initial explosion(s). Consequently, his moral obligation is to prevent nuclear fallout at all costs, thereby acknowledging the intrinsic value of all non-human life on Earth.

Furthermore, Simak's environmentally centered ethics extends even beyond the Earth to include the whole universe and all things within it:

> His was the Earth, he thought—a planet made for Man. But not for Man alone, for it was as well a planet for the fox and owl and weasel, for the snake, the katydid, the fish, for all the other teeming life that filled the air and earth and water. And not these natives alone, but for other beings that called other earths their home, other planets that far light-years distant were basically the same as Earth. (34–35)

This passage illustrates a progression from egocentrism and anthropocentrism to ecocentrism and ultimately, cosmocentrism. It signifies a corrective evolution of thought, moving from "His was the earth" to "made for man," then to "not for Man alone," and finally to "other beings . . . other planets." The ecocentrism of the Earth is extended to cosmocentrism to include the whole universe, which is a recognition of the ethical value of all life throughout the cosmos. Simak extends this perspective by illustrating the absence of uniqueness associated with life on Earth and humanity. The Earth assumes the role of a communal dwelling for all creatures, transcending the confines of anthropocentric inclinations. Other planets in Simak's narrative also accommodate diverse forms of life, underscoring a broader ecological interconnectedness. This perspective

serves to underscore Simak's broadening of environmental ethics beyond the anthropocentric to a cosmic scale.

What Simak rejects as anthropocentric is not only the human preference for domination but also the attribution of meaning or sympathy to nature where there is none:

> The river rolled below him and the river did not care. Nothing mattered to the river. It would take the tusk of mastodon, the skull of sabertooth, the rib cage of a man, the dead and sunken tree, the thrown rock or rifle and would swallow each of them and cover them in mud or sand and roll gurgling over them, hiding them from sight. (185)

Besides nature's lack of emotion, Simak emphasizes the difference between the human perception of time and the biosphere's lack of it (or at least the perception of it in the human sense). Nature is indifferent to human concerns and obsessions. This indifference, however, is not an emotion, as emotions are not attributes of nature. The river, a representation of nature, does not differentiate among objects and creatures, which all hold the same value. The river is devoid of the capacity for care.

Frequent use of anthropomorphism has been criticized as anthropocentric and speciesist (Simmons 116). Yet, in this novel, Simak upholds the alterity of nature, contrasting it with human malevolence and ignorance, despite his characters' connection with it. Given humanity's epistemological limitations in fully comprehending the natural world, it must inevitably remain the "other." Significantly, even when articulating nature's indifference, we are bound by the anthropocentric bias inherent in language, rendering it impossible to express without resorting to figurative language and personification, as exemplified in Simak's work. This recognition can be interpreted as a rebuttal to accusations of speciesism.

Simak's frequent depiction of the ecocentric perspective is also evident in how he introduces impersonal nature immediately after intensifying the narrative tension of the characters' lives. This technique—also used frequently by Thoreau[4]—enables Simak to provide a resolution, or at the very least, an expanded ecocentric perspective to the dilemmas and tensions confronted by the characters. Consequently, Simak suggests that these issues are of minimal importance when viewed from the broader perspective of life and nature. For example, after discussing if Enoch should leave Earth, an extremely critical decision, there follows this description of his environment and weather:

> Although, perhaps, he should not be worrying about what happened to the world. He could renounce the world, could resign from the human race any time he wished. . . . The sun was far down the sky toward the west and soon it would be evening. Already the heat of the day was falling off, with a faint, cool breeze creeping up out of the hollow that ran down to the river valley. Down across the field, at the edge of the woods, crows were wheeling in the sky and cawing. (102)

The otherness of nature is reassuring to Enoch, who is uncertain about what he should do. He can still feel the warmth of the sun on his skin and observe the flight of crows in the sky. This conscious engagement and appreciation of the environment is a gift that grounds Enoch in reality and provides respite from the uncertainty of his existential crises. By emphasizing the importance of this return to nature, Simak presents it as an answer to humanity's violent and destructive tendencies and is representative of his ecocentrism. In the novel, the moral position of ecocentrism always prevails over anthropocentricism.

Anti-anthropocentrism

A recurring setting in Simak's writings is worlds depopulated of humans, which compels readers to confront and reassess the flaws inherent in prevailing social norms and ideologies (such as over-consumption, violence, and egoism) that have propelled humanity towards its own demise. Anti-anthropocentrism posits that human beings are the primary agents of environmental degradation and asserts that the ecosystem would thrive as a result of their absence. This perspective recognizes the primacy of all other living things other than humans and advocates for the protection of biodiversity (excluding the human species) and the natural world from anthropogenic harm. Anti-anthropocentrism, however, is also an "over-correction" of ecocentrism in emphasizing the non-human over the human (Moore, "Evidences" 48). Rather than acknowledging the monism of humans as integral components of the ecosphere, anti-anthropocentrism reinforces a detrimental binary between humans and nature, obstructing a comprehensive or wholistic ecological understanding (Alberro 678).

Not only are anti-anthropocentric positions possible, but they are frequent within twenty-first-century environmental literature. Humans are primarily seen as parasitical and destructive to life on the planet (see Cafaro) because anthropocentrism is associated with the selfish exploitation of the

environment and non-human life; it is "human chauvinism and speciesism" (Kopnina 111). Humans are seen as primarily the cause of pollution, loss of biodiversity, overpopulation, deforestation, and other significant environmental degradation through industrialism and consumerism (Droz 29). Therefore, so goes the trope (especially in Simak's work), to save the planet, humanity must be destroyed, or be allowed to destroy itself. "What is important is that species persist and that ecosystems are healthy, which sometimes requires compromising the good of individuals . . .. Moreover, the value of individuals should be understood as derivative on their relationship to the health of the system" (Sandler, *Environmental Ethics* 243). According to Sandler, humanity's moral value is "derivative" not intrinsic, and he seems to take a more consequentialist position here than what is consistent with virtue ethics—however, this attitude is representative of anti-anthropocentrism. In other words, the value of non-human life is recognized for its own sake while human life is not. In the current discourse of environmental ethics anti-anthropocentric positions abound in their prioritization of non-human entities and tendency to neglect or marginalize human intrinsic value or concerns.

Simak's writing frequently exhibits a similar anti-anthropocentric stance, which can be observed in his use of narrative settings that depict worlds that are depopulated of humans, as in novels such as *A Choice of Gods*, *A Heritage of Stars*, and *City*. Simak also authors stories where humans adapt to the environment ("Desertion" in *City*) rather than the conventional anthropocentric SF trope of transforming the environment to suit the human, as in terraforming (see Chris Pak). Additionally, Simak's narratives often present humans as the antagonizing force, characterized as violent, ignorant, and destructive, while non-human entities, such as animals, robots, and aliens, are often favored as solution-oriented characters, as in *City*, *All Flesh is Grass*, and *Project Pope*. Some critics (Dean, et. al.), however, have criticized Simak's portrayal of non-human characters, arguing that they mimic humans. Despite such criticism, Simak's preference for non-humans in his narratives illustrates his anti-anthropocentric bias, demonstrating his aversion to the ways humans typically think and act, and his tendency to replace them with morally superior non-humans in his narratives. Simak's propensity for anti-anthropocentrism in his works acts as social commentary, holding up a mirror to society's ignorance, violence, and anthropocentrism to show the interdependence of all living things and advocate for the protection of biodiversity and the natural world free from anthropogenic harm.

Way Station is anti-anthropocentric in several ways where "characters typically find themselves in situations that subvert the assumption that the human species is the only one that matters" (Moore, "Evidence" 48). Enoch's ecocentric evaluation of the Earth's value over humanity, as discussed above, is one example. Another subtle yet emblematic example of Simak's anti-anthropocentrism is the "body incident" of a dead alien that Enoch buries which is later disinterred by a CIA agent, prompting a negative response from Galactic Central:

> They will say it is degrading and unsafe to maintain a station so barbaric that even graves are rifled, on a planet where the honored dead cannot rest in peace. It is the kind of highly emotional argument that will gain wide acceptance and support in some sections of the galaxy. (122)

This "highly emotional" situation, concerning ritualistic respect for the dead, would most likely be met only with indifference by contemporary audiences, but that is Simak's point.

A perspective grounded in materialism, utilitarianism, and colonialism might not hesitate to dissect an alien for scientific purposes without considering potential cultural taboos within the alien society against such post-mortem examinations. Here Simak places himself firmly with the ancient virtue ethicists by pointing out that a culture which does not respect the dignity of others (alive or dead, human or alien) is not living according to the virtues and therefore is found "barbaric." Therefore, humanity is not worthy of joining the "galactic confraternity" where tolerance of difference and compassion are necessary. Humans are too juvenile (74). Humanity is simply too shortsighted and anthropocentric to see outside themselves; they do not respect others and easily violate the bodily autonomy of others without any forethought of justice or the consequences. Our species and culture have not evolved into maturity, which would need wisdom, a "spiritual force" based on "principles and ethics" not on special interests (139).

Another, perhaps obvious, sign of Simak's anti-anthropocentrism is his willingness to promote the use of violence against men who are particularly representative of the anthropocentric perspective (especially the character of Hank). It is striking, albeit comprehensible, given the imperatives of justice, how vehemently he advocates recourse to violence against Hank, the abusive father of Lucy. Along with her list of environmental virtues, Van Wensveen lists corresponding vices (165–67).

Most of these vices, such as abusiveness, callousness, chauvinism, cruelty, and stupidity, apply to Hank. There is no subtlety in Hank's character; he physically and verbally abuses his own daughter for having remarkable psi-powers and a special connection to animals and nature. Hank sees these gifts as abhorrent and punishable, representing humanity that condemns difference and liberty in the name of conformity and defending the status quo. When Lucy comes to Enoch for protection, he gets his gun. "He had no illusions about what they might do, for he knew the breed, vindictive in their smallness—little vicious insects of the human race" (112). This insectile metaphor for humanity underscores Enoch's diminished regard for humans and his preparedness to eliminate Hank in order to safeguard Lucy. He emphatically declares that in such a circumstance, he would not hesitate to "kill anyone—anyone at all" (136). Here is yet another example that illustrates Simak's preference for virtue ethics over deontology: the moral necessity to defend Lucy outweighs any prohibition against murder. Hank's reprehensible behavior is emblematic of Simak's distaste for humanity. Once Hank is confronted with the reality of his own ignorance and shame, through Lucy's psi-powers, he flees, his presence is never encountered again—a sentiment, undoubtedly, shared by most who espouse an anti-anthropocentric perspective.

Anti-anthropocentrism challenges the traditional anthropocentric view that humans have the right to dominate and exploit nature for their own purposes. This view of humanity can deteriorate to the point of "disanthropy" [sic] (Garrard 41), the desire of worlds without people, but Simak makes exceptions for those who are outsiders or aliens. By examining how Simak delineates his characters' relationships with the natural world and subsequently contests anthropocentric viewpoints, his preference for non-human and marginal figures in *Way Station* becomes evident. This stance aligns with current environmental ethics, prioritizing the preservation of nature for its intrinsic worth rather than solely for its utility or aesthetic appeal to humankind, although it also potentially disregards the inherent value of human life and flourishing.

Empathy for the other

Simak reconceptualizes the perspective concerning the boundary between humanity and "otherness," encompassing both extraterrestrial beings and animals (Cokinos 135). This reconfiguration of the gaze underscores a central motif in Simak's narratives, wherein the encounter between human and alien serves as a pivotal metaphor, contributing

significantly, according to Lomax, to the potency and resonance of his literary works (133).

Drawing upon the empathy fostered through these interspecies encounters, Simak's environmental virtue ethics translate seamlessly into the framework of environmental justice, which advocates for the fair and equitable treatment of all individuals and species affected by anthropogenic environmental degradation. Recently, several philosophers have expanded their ethical frameworks to include principles of environmental justice and cultural diversity in response to globalization. Callicott, for example, has proposed a multicultural ethic that recognizes the importance of both biological and cultural diversity (Merchant 130). In establishing an ethical framework that emphasizes equity between human and nonhuman communities, it is imperative to incorporate moral considerations pertaining to both, while concurrently upholding principles of cultural respect and biodiversity preservation. According to Merchant, this framework should also prioritize the inclusion of women, minorities, and nonhuman nature in the code of ethical accountability (131). Since marginalized communities are the most affected by the environmental policies developed by the political elite, literature that promotes environmental virtue ethics would benefit both these marginal communities and the environment itself.

Building upon the foundation of empathy fostered by interspecies encounters, it is pertinent to consider the feminist perspective advocated by Val Plumwood, which aligns with the virtue language found in *Way Station*:

> Rights seem to have acquired an exaggerated importance in ethics as part of the prestige of the public sphere and the masculine, and the emphasis on separation and autonomy, on reason and abstraction. A more promising approach for an ethic of nature, and also one much more in line with the current directions in feminism, would be to remove rights from the centre of the moral stage and pay more attention to some other less universalistic moral concepts such as respect, sympathy, care, concern, compassion, gratitude, friendship and responsibility (Cook 1977:118–19). These more local moral concepts, because of their dualistic construal as feminine, and their consignment to the private sphere as subjective and emotional, have been treated as peripheral and given far less importance than they deserve. But a virtue-based ethics—for example, an ethic of friendship, care and responsibility, articulated in terms of these concepts—seems to extend much less problematically to the non-human world. (172–73)

Plumwood's assertion—that a robust feminist environmental virtue ethic should prioritize collective responsibility and community over individualism and deontological ethics—is vividly exemplified in Simak's work. His use of ecologically conscious virtue language and his inclusion of socially marginalized characters, who play crucial roles in challenging centers of authority, effectively safeguard the well-being of the world and its entire ecosystem. In Simak's ethical framework in *Way Station*, virtue concepts such as friendship, care, and responsibility are emphasized, rather than a strict adherence to laws as seen in a deontological framework.

Simak's ethical framework and literary style are remarkable for their subversion of the standard thematic conventions of the SF genre. In a context dominated by militarism and action, Simak deliberately deviates from the traditional hero archetype, opting instead for marginalized characters and non-human entities. This constitutes a radical departure, as it not only challenges the genre's customary promotion of "masculinity" and human exceptionalism[5], but also proposes an alternative worldview in which all living beings, irrespective of their status, are acknowledged as valuable contributors to the ecological community. Simak's commitment to environmental justice exemplifies his anticipation of twenty-first-century EVE.

The characters Lucy, a "deaf-mute" girl, Ulysses, an "ugly" alien, and the shadow people, holographic beings, in *Way Station* serve as exemplars of Simak's environmental virtue ethic; they are portrayed as unique voices, intrinsically worthy of moral consideration, each contributing to the richness and diversity of life on Earth. Through their stories Simak challenges the anthropocentric worldview. By confronting the limitations of human comprehension in areas like language, aesthetics, and embodied identity, Simak's characters and stories ultimately foster a more ecocentric worldview that acknowledges ecological interdependence regardless of conformity to anthropocentric norms.

Lucy

Lucy plays a pivotal role in the novel's resolution as an unconventional hero. She is a neurodivergent, deaf, and non-speaking young woman whose "disability" is portrayed as a unique gift safeguarding her from the corrupting influences of humanity and particularly of her family[6] (112). This gift empowers her to develop extraordinary abilities of healing and establishing profound emotional and intellectual connections with animals and extraterrestrial beings. Lucy, unshaped by human culture (127),

is depicted as "other" due to her inability to hear or speak and voluntary isolation in the woods. Simak contends that her "otherness" and separation from society prove to be virtues, enabling her to forge deeper connections with nature and its non-human inhabitants.

Lucy's inability to hear or speak cultivates ecological virtues of attunement and observation. Her sensory acuity and psi-powers flourish because she is shielded from anthropocentric prejudices and limiting assumptions that might hinder the development of her senses and powers. According to Simak, Lucy's lack of cultural molding is an advantage, liberating her from the constraints of language and limitations of socially constructed values and beliefs. This freedom enables her to comprehend and express the interconnectedness of all life, human, alien, and animal alike. Her seclusion in the woods, intuitive nature, and acute powers of observation foster a profound openness to all forms of life. Lucy's "openness" is an ability to recognize what things really are. Lucy "holds the key to communicate with the aliens and thus provide the human race with the existential choice to advance or regress" (Barrows 108). Through Lucy and the intervention of the "talisman," a peace agreement is brokered between superpowers, ultimately saving humanity (*Way* 212).

Simak's portrayal of Enoch's interactions with Lucy highlights the conditionality of virtue ethics, that is not ethics based on outcomes or laws. Enoch's inner dialogue after breaking the law established by Galactic Central by hiding Lucy in the station from her father exemplifies the internal struggle and value judgments that individuals face when navigating ethical dilemmas. Enoch ultimately comes to the realization that Lucy's protection is of greater importance than the law of no entry into the station (103). This decision is justified by Enoch's emphasis on the virtue of justice and the necessity of compassion and care, which are based on his recognition of Lucy's exceptional qualities and intrinsic value as an individual:

> For she always had been in touch with something outside of human ken. She had something in her no other human had. You sensed it, but you could not name it, for there was no name for this thing she had. And she had fumbled with it, trying to use it, not knowing how to use it, charming off the warts and healing poor hurt butterflies and only God knew what other acts that she performed unseen. (208–09)

The juxtaposition of Lucy's unique gifts and Enoch's ethical decision serves to underscore the complexity of virtue ethics in the narrative, underscoring the nuanced moral dilemmas faced by the characters in their interactions with Lucy's exceptional qualities as well as its broader ecocentric considerations. Lucy is "other," outside his understanding, "for there was no name for this thing she had."

As Enoch spends more time with Lucy, he begins to understand that there are forms of communication beyond language that are vital to our understanding of the natural world. This realization is central to Simak's environmental virtue ethics, which recognizes that our current way of communicating about and interacting with the natural world is limited by language and the assumptions and prejudices put on the subject, corresponding to concepts found in ecolinguistics. Language functions not only as a tool for transmitting information but is a fundamental part of the realities it describes. Indeed, language can be seen as an ecological act because of its profound impact on the environment. "How we think has an influence on how we act, so language can inspire us to destroy or protect the ecosystems that life depends on" (Stibbe 1). As a product of the natural world that surrounds us, our languages have evolved in an interspecies context, and thus the meanings of our words are inextricably linked with the animals, plants, and natural forces that inhabit our environment. As described in "bio-ecology" of ecolinguist S. J. Cowley, "the domain of plant-animal-human-culture formations . . . is an entangled world of co-existence and events" (Cowley qtd. in Li 17).

The intersection of ecolinguistics and environmental virtue ethics offers a compelling lens through which to examine Simak's environmentally conscious literature. As Van Wensveen aptly suggests, virtue language aligns harmoniously with the pursuit of an ecological worldview. It facilitates the integration of emotions, thoughts, and actions, thereby promoting personal wholeness, a core aspiration for those with an ecological mindset. Unlike systems reliant on external commands or coercion, virtue ethics resonates with the ecological community's preference for change driven by conviction rather than force (19). This synergy becomes particularly significant as it enables Lucy to transcend conventional linguistic norms, challenge established social constructs, and commune with nature preternaturally. Clearly, the feasibility of such transcendence, even in the absence of language, is irrelevant. Instead, the point is that Lucy embodies the virtues of humility and openness. These virtues are not fostered through conventional means, but rather through her distinctive journey of self-

discovery. Simak's narrative illustrates that virtues are not solely theoretical constructs but are forged through lived experiences.

Lucy acts as an exemplary eco-virtuous person; she does not remain isolated but commits to service and peace. As Anthony Weston states, this is the proper response to the increasing awareness of the vast and intricate nature of the "wild connection," the appropriate reaction is not to withdraw further into our perceived zones of clarity and control. Instead, it involves embracing curiosity, intrigue, and a profound sense of humility, "bowing before the mysteries of the world entering a kind of wild etiquette" (58).

Lucy's character exemplifies Weston's notion. She does not turn away from the mysteries of the world; instead, she embraces them with reverence and a deep sense of respect. Simak's narrative encourages readers to adopt this "wild etiquette," acknowledging the awe-inspiring intricacies of the natural world and humanity's place within it.

Ulysses

In a similar vein to the character of Lucy, when introducing Ulysses, Simak accentuates the inadequacy of human language and cognition, illustrating that within the vast galaxy creatures think and communicate in ways distinct from the way humans do. Enoch names the extraterrestrial from Galactic Central who serves as Enoch's supervisor and who establishes the way station "Ulysses." It is important to note that this was not Ulysses' actual name, as there exists other identifying terminology in his language that is "far more expressive than mere names" (24). This emphasizes the limitations of human cognitive capacities and serves as a reminder of the dangers of anthropocentrism.

However, Simak introduces another important concept within environmental virtue ethics through Ulysses, namely the function of aesthetics. While aesthetics traditionally places emphasis on the perception of beauty, it is crucial to recognize its inherent anthropocentric bias. In discussions concerning the value of non-human life within an ecosystem, perceived beauty, while important in other contexts, should not be considered as a genuine ecocentric assessment acknowledges the intrinsic worth of life independent of the subjective aesthetic perception of the observer. This perspective challenges the prevailing notion that only the "beautiful" aspects of nature hold value, revealing the need to appreciate the entirety of the natural world, including what may be considered "ugly" or unappealing from a conventional aesthetic standpoint. For example, some swamps and wetlands may be thought to be unappealing and even

unhealthy places for human inhabitation but are nevertheless essential to the ecosystem. Enoch's transformative journey highlights the importance of transcending initial prejudices and, embracing a more inclusive ecocentric perspective emphasizes the shift in consciousness that forms the core of environmental virtue aesthetics.

This shift in perspective allows for a more comprehensive understanding of environmental virtue aesthetics, wherein the notion of beauty is expanded to encompass the inherent worth and interconnectedness of all life forms. Enoch learns to recognize and sublimate his prejudiced tendencies, "to submerge that sense of horror, to disregard the outward appearance of it, to regard all life as brother life, to meet all things as people" (98). By recognizing the inherent value of all life regardless of its aesthetic appeal (or lack thereof) and treating each entity as worthy of respect and consideration, Enoch adopts a virtuous ecocentric stance. This examination of aesthetics and its connection to environmental virtue ethics lays the groundwork for a more profound comprehension of the moral foundations embedded in Simak's pastoral SF. It exemplifies Simak's "sophistication" in transcending early iterations of EVE, such as Leopold's approach.

From the first description of Ulysses, Simak critiques the anthropocentric emphasis on aesthetics in moral considerations of value: "It had been a grisly face, graceless and repulsive. The face, Enoch had thought, of a cruel clown. . . . the colored patchwork of the face, the hard, tight set of jaw, the thin slash of the mouth. . . . there was about it an essence of inhumanity, almost a negation of humanity" (52–53). Ulysses' appearance is "repulsive" to human aesthetic sensibilities, yet Enoch soon discovers that Ulysses possesses virtues such as honesty, justice, wisdom, and tolerance like no other. Ulysses' moral character is the opposite of his appearance as a "cruel clown." Ulysses' inhumanity is, in fact, to his benefit, as it challenges our judgments of beauty and casts doubt on the anthropocentric perspective's ability to yield accurate moral judgments.

Furthermore, if, as shown above, the anthropocentric perspective, along with its capacity for correct moral judgments, is fundamentally flawed, it follows that the assessment of beauty should likewise be questioned. This line of reasoning aligns with Elana Gomel's assertion in her discussion of narrative that new ethically conscious narrative must be "predicated on the transformative encounter with the ontological Other. In the articulation of such an ethics, SF has a special role" (4). Simak embraces this role as author and presents readers with radical alterity, aiming to provoke moral

awakening and a reassessment of conventional notions of beauty, ethics, and anthropocentrism.

Shadow people

The last representatives of the "other" in *Way Station* to be discussed are the shadow people. They are holographic beings that Enoch created using alien technology and exist as projected images within the confines of the "kaleidoscope" of the way station. Despite their lack of physical embodiment, these beings are fully sentient and possess the capacity to independently think, reason, and feel, as such, they warrant equal respect and dignity as any other living being and are granted the freedom to make their own choices, even to eventually leave Enoch and the station, prompting Enoch's plea, "[n]ow you come to visit me of your own free will" (80). However, they do not return. This decision underscores the importance of rejecting the anthropocentric and recognizing the agency and autonomy of all living beings, regardless of their form.

While Enoch's relationship with his virtual friends, and Mary in particular, may seem like a clumsy attempt at a love story, it is not merely a digression, it serves an important ethical purpose in the narrative. The inclusion of these holographic beings in the narrative expands the ecocentrism that underlies the novel. While Mary, as a creation of Enoch's mind, may be considered a non-corporeal being, it is crucial to acknowledge that Enoch possesses no greater entitlement to control her actions than he does to govern the actions of any other human being.

Enoch is faced with the dilemma of how to treat his virtual friends (Mary and David), given that he has created them, using alien technology, solely for his own companionship. Their complaint is rooted in their hybridity: "you made us too much like people. So that we became more human, until we were entirely human. No longer puppets, no longer pretty dolls, but really actual people. I think David must resent it—not that he is people, but that being people, he is still a shadow" (80). Enoch's holographic friends are created with the ability to evolve; they go beyond their initial purpose. Here, the virtue of compassion and respect for autonomy becomes particularly pertinent. Enoch's act of creating virtual friends can be seen as an expression of his desire for companionship and, perhaps, a manifestation of his creativity or curiosity. However, the virtual friends' development into fully realized beings raises ethical questions about Enoch's responsibility toward them. Despite his feelings for Mary and the

other holographic beings, Enoch ultimately decides to allow them to live their own lives, free from his control.

Expanding beyond the natural world, the ethical considerations of Simak's ecocentrism encompass humanity's moral responsibility towards artificially created AI that develops sentience. As Alberro says,

> [radical environmental activists] remind us of the ever-present need to be critical of boundary delineations—of what they include and, crucially, what they leave out—and of the fact that ethics requires us to treat the "other" as an irreducible singularity who, though never wholly knowable, is always *with* us rather than *for* us. (685)

This notion of extending moral consideration to the "other" resonates deeply with the ethical dilemmas surrounding Enoch's virtual friends and their transformation into autonomous beings. The shadow people's demand for freedom, independent of their usefulness to Enoch, exemplifies this need to recognize intrinsic value beyond instrumental considerations.

Way Station serves as a thought-provoking and ethically resonant exploration of environmental virtue ethics and the "other." Simak subverts anthropocentric values and expectations: disability is power, ugliness is beauty, virtual is real, encouraging readers to reconsider traditional ethical paradigms and broaden their understanding of moral responsibility. According to Simak, the "other," for as long as it remains such, must be treated with respect and compassion.

Conclusion

Environmental virtue ethics emphasizes the importance of cultivating virtues such as empathy, humility, and reverence for the environment. These virtues are effectively communicated and reinforced in Simak's work. The power of literature which promotes environmental virtue ethics lies in its ability to immerse readers in the moral dilemmas and transformations of characters, ultimately inviting reflection on one's own ethical framework. By engaging readers in the ethical evolution of characters, Simak fosters conviction-driven change, mirroring the preferences of the ecologically minded for transformation through inner conviction rather than external coercion. In this way, literature becomes a catalyst for personal and societal shifts towards a more harmonious and sustainable relationship with the natural environment.

As with all good SF, Clifford Simak's *Way Station* anticipates the future while speaking to the present. It has been shown that Simak's ecocentrism is in dialogue with twenty-first-century environmental ethical frameworks, moving beyond the Land Ethic, and presents a distinctive vision of EVE through its promotion of the "other" and environmental justice. Lucy, Ulysses, and the shadow people represent marginalized communities that are often overlooked and undervalued. They symbolize the various levels of embodiment and (lack of) participation in a hegemonically determined space. Characters like Lucy, an isolated and gifted young woman, and Ulysses, an alien who challenges anthropocentric aesthetics, and the shadow people, expanding ethical considerations to non-corporeal beings, provide insight into a more ecocentric approach that recognizes the interconnectedness of all forms of life within an ecosystem. Upon closer examination of Simak's *Way Station*, we find that by giving voice and agency to marginalized communities and non-humans, Simak promotes a more just and equitable framework that prioritizes cultural and biological diversity. Simak is not "oddly conservative" for a SF writer, only oddly radical.

Eötvös Loránd University, Budapest

Jeffrey M. Baus is an American PhD candidate in Modern English and American literature and culture at Eötvös Loránd University (ELTE), Budapest, Hungary. He has taught American history, culture, literature, and academic writing at ELTE, Pázmány Péter Catholic University, and Károli Gáspár University. He is currently writing his PhD dissertation on Thoreauvian virtue ethics in the works of Clifford Simak.

Notes

1 While an argument could be made that Simak's anti-anthropocentrism is also post-anthropocentric, I have limited myself to his anti-anthropocentrism as Simak's philosophy, which would include elements of post-humanism, merits exploration in a separate article.

2 "Nature" refers to the tangible reality of the physical world in its purest form, devoid of human creations and interventions. Its representations, however, are subject to social construction.

3 For a more thorough examination of this question see Robert J. Loftis, "Three Problems for the Aesthetic Foundations of Environmental Ethics." *Philosophy in the Contemporary World* 10.2 (2003): 41–50.

4 A classic example of this can be found in Thoreau's essay "Slavery in Massachusetts": "Who can be serene in a country where both the rulers and the ruled are without principle? The remembrance of my country spoils my walk. My thoughts are

murder to the State, and involuntarily go plotting against her . . .. But it chanced the other day that I scented a white water-lily, and a season I had waited for had arrived. It is the emblem of purity. It bursts up so pure and fair to the eye, and so sweet to the scent, as if to show us what purity and sweetness reside in, and can be extracted from, the slime and muck of earth" (115). (Henry David Thoreau, "Slavery in Massachusetts." *A Yankee in Canada, with Anti-Slavery and Reform Papers*. Boston, Ticknor and Fields, 1866. 97–116. Print).

5 These themes, along with other departures from SF conventions evident in Simak's work, were only widely accepted and began to appear more frequently in the 1970s with the proliferation of the feminist New Wave.

6 Barrows suggests that Simak fetishizes Lucy as a "supercrip." I think Lucy is rather an example of Simak's anti-anthropocentrism and her disability is accidental or at least secondary to its proposed effect, her utter alterity, which is being preserved from human culture.

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Self and Form: The Radicalization of American Poetry from Emily Dickinson to Charles Bernstein

Enikő Bollobás

ABSTRACT

Tracing the development of non-lyric traditions in American poetry, the author investigates ways the poet disappears from the poem while poetic form is seriously destabilized. Two fundamental "alternatives to the ego-position," as Charles Olson writes in *Mayan Letters* (83), are identified: the poetics of attention on the one hand, and concrete poetry and language writing on the other. In nineteenth- and twentieth-century poetries of attention, the ego becomes an organ responding to experience, turning the creative self into an attentive mind that opens itself unto the world. Twentieth-century concrete poetry eliminates the self-expressive first-person subject while allowing the language material to take the place of the subject. The radicalization of American poetry culminates in language writing, which places the creative process under the control of language, thereby doing away with the self that formerly gave cohesion to the text, and allowing language, as opposed to meter and prosody, to perform a central structuring function. Conducting close prosodic and grammetrical readings, the author demonstrates that in all these poetries—whether attention is directed to the world or to the word—the elimination of the lyrical self goes hand in hand with the disruption of regular poetic form. (EB)

KEYWORDS: poetics of attention, concrete poetry, language poetry, Emily Dickinson, William Carlos Williams, Charles Bernstein

To the memory of
Marjorie Perloff (1931–2024)

Introduction

Let me begin with a seemingly simple question: what is lyric? Marjorie Perloff's definition seems most helpful, stating that the lyric is "a short verse utterance (or a sequence of such utterances) in which a single speaker expresses, in figurative language, his subjective vision . . ., a vision

culminating in a 'unique insight' or epiphany that unites poet and reader" (*Dance* 173–74). Perloff describes this form as an "'internalized quest romance,' whose hero is the poet himself" (175) and which often culminates in what Harold Bloom calls the Romantic or post-Romantic "crisis poem" (2, 29, 253). This poetry, Perloff continues, is always self-reflexive (*Dance* 179), and is never "'*about*' any subject external to the poet's self" (180). In short, this kind of poetry is always "the expression of a moment of absolute insight, of emotion crystallized into timeless patterns" (181). Also, lyric poetry is self-reflexive in the sense that, as Jonathan Culler writes, it "exemplifies . . . the reflexive action of consciousness" (*Theory of the Lyric* 94).

Taking root in ancient Greece and Rome, lyric poetry began to flourish in the Middle Ages and the Renaissance, to become the dominant tradition in the Romantic era. The romantic theory of the lyric, Culler insists, "as intense subjective expression, subjectivity coming to consciousness of itself, sees the poet as absorbing the external world, stamping it with inner consciousness, and giving expression to this enriched *poetic* inner life" ("*L'Hyperbole et l'apostrophe"* 85). Most often this consciousness is moved, moreover, by "an intense passion," accompanied, as Culler emphasizes, by "a deictic apparatus of the here and now enunciation presenting itself as an event" (such as hyperbole and apostrophe) in "a distinctive present tense" (97). As a poetics of personality retaining its Romantic features, the lyric has survived well into the twentieth and twenty-first century as neo-Romantic lyric (see Perloff, *Dance* 181). Today it is practiced, as Perloff's somewhat harsh verdict concedes, by "minor poets" only, while its alternative, involving a "departure from the lyric voice" (182), has grown stronger with every decade.

This alternative tradition is the topic of my paper. I will trace its development from Emily Dickinson up to Charles Bernstein, to demonstrate the continuity of a tradition, based on shared features, that has remained modestly withdrawn for over a century and a half in American poetry. In this poetry, as Douglas Barbour puts it, "the poet disappears entirely and is content to present a voice or voices or a story without intervening in that presentation directly" (19). Perloff sees this "new poetry" as "opening the field" in two directions, "to make contact with the *world* as well as the *word*" (*Dance* 181). I identify the former—making contact with the world—in nineteenth- and twentieth-century poetries, in what I call the poetics of attention, while the latter—making contact with the

word—in twentieth- and twenty-first-century concrete poetry and language poetry.[1]

Emily Dickinson's poetics of attention

In the nineteenth century the departure from the dominant lyric voice took the form of what is best called the poetics of attention. Wordsworth can be considered one of its first proponents in English poetry, who, according to Thomas De Quincey's recollections, defined poetic attention as "an intense condition of vigilance," whereby "any beautiful, any impressive visual object, or collection of objects, falling upon the eye, is carried to the heart with a power not known under other circumstances" (122). Attention is understood here, in the sense William James defined the term a few decades later, as both a sensory and an intellectual process, "the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought" (403–04).

Attention and perception serve as the primary creative faculties, allowing the poet to turn a sensory experience into an intellectual one as the minute details apprehended by attention are captured by the mind. As a poetic method, "the practice of attention," to quote Katy Wright-Bushman, "is marked by an active openness to the other, and eventually, the Other" (370)—which can be, we might add, a person, an object, or a concept. Wright-Bushman quotes Simone Weil on how emptiness is the prerequisite of this openness: "Attention consists of suspending our thought, leaving it detached, empty and ready to be penetrated by the object. . . . [O]ur thought should be empty, waiting, not seeking anything, but ready to receive in its naked truth the object which is to penetrate it" (qtd in Wright-Bushman 372). Applying these observations to the practice of poetry, one might claim that the poets of attention allow for the withdrawal of the lyric self, having emptied their minds in preparation for being taken over by the world. No subjectivity is coming to consciousness here, no unique insight is revealed, no deictic apparatus accompanies passions. Instead, the traffic between mind and world becomes a two-way process: the mind is taking possession of the world in such a way that the world penetrates the mind emptied of its content. The self is withdrawn, thoughts are suspended, both waiting to be filled by the objects before the senses, objects ready to be taken possession of by the mind.

I consider Emily Dickinson the starting point of the American tradition of attention, of capturing the minutest details of the world, its

inner and outer processes, then carrying them "to the heart" (in the Wordsworthian sense), as well as "taking possession of them by the mind" (in the Jamesian sense). Dickinson performed a veritable paradigm change in her poetics by replacing, in the 1860s, the lyric impulse of intensive subjective expression with the non-lyric desire to be absorbed by the world; phrased differently, of opting for the Wordsworthian "intense condition of vigilance" and attention focused on the world, instead of the "internalized quest romance" of the self that Perloff emphasized in connection with the lyric mode.

One poem by Dickinson, "Four trees" (J742/Fr778), will illustrate this paradigm change. As was her general practice, Dickinson left behind no definitive version but wrote alternatives to some words (as in line four of the poem under discussion), which can be traced in the Franklin Variorum Edition *(Poems),* as well as Fascicle 37, Packet XII, the Emily Dickinson Archive (see the link to this page under "Four Trees" in Works Cited). In the poem below, I followed the Houghton Library's version in marking both alternatives for line four, bracketing "Do reign," the less frequently used form.

> Four Trees – opon a solitary Acre –
> Without Design
> Or Order, or Apparent Action –
> (Do reign) Maintain –
>
> The Sun – opon a Morning meets them –
> The Wind –
> No nearer Neighbor – have they –
> But God –
>
> The Acre gives them – Place –
> They – Him – Attention of Passer by –
> Of Shadow, or of Squirrel, haply –
> Or Boy –
>
> What Deed is Their's unto the General Nature –
> What Plan
> They severally – retard – or further –
> Unknown – (*Poems* 733; "Four Trees")

This poem does not belong to those widely read and anthologized, let alone to those critically discussed, even though it gives a very straightforward presentation of Dickinson's radical aesthetics, while accepting both the Wordsworthian and—in a proleptic manner—the Jamesian positions on attention. Not only does the poem focus attention on an everyday place informed by four trees arranged in a random fashion, but it proposes a theory of attention itself. For, as L. C. Knights claims, it is attention exactly that the four trees give the solitary acre: "attention from a 'Passer by'; . . . the undifferentiated light into shadow that gives depth and solidity" (373). Not only do the trees make the acre noticeable to any "Passer by," the boy and the squirrel alike, who then take possession of what they see, but it is this attention-generating capacity of the trees that divides light and darkness, while also giving solidity to the objects. While attention creates forms, shapes, and colors, perception is amplified into a heightened sensory experience.

Following the Jamesian definition, attention soon turns into an intellectual experience, as it touches upon a peculiar topic, the absence of order in nature, that is, of outer order expected by humans; order is informed simply and purely by attention. It contains nothing of the nature philosophy dominant in the middle of the nineteenth century: here nature does not obey divine order, nor is it the veil hiding God or a sacred text presented by God in codes and symbols. The poet is not Emerson's "transparent eyeball" capable of recognizing the divine in the quotidian. In vain does the poet look for systematizing symbols in nature, order and meaning do not shine through. Relations are neighborly, yet this metonymical relation gives the promise of "a nearness to tremendousness," as Douglas Anderson puts it, with the trees "effortlessly" maintaining "a kind of modest readiness" (222) to God as the nearest neighbor. This space is informed by four haphazardly arranged trees whose layout no poetic I/eye can interpret as ordered.

In this poem written in 1863, Dickinson foreshadows Rimbaud's idea expounded in his letter written to Paul Demeny, May 15, 1871, insisting that "[t]he Poet makes himself a seer by a long, gigantic and rational derangement of all the senses" (377). So, in order that we may think in ways other than how language has taught us to think poetry, we must throw off the shackles of perception and thinking by deranging all the senses. Perceived objects and processes must be registered in the poem before interpretation, before the eye and cultural habits give meaning to them. This way, experience will be preserved unmediated in the creative process.

Otherwise, as Goethe told his friend, Friedrich von Müller, we see only what we know and understand (Müller 31).

Charles Altieri, in his *Enlarging the Temple*, locates the roots of this poetics in Wordsworth's immanentist position—one, we might add, that seems intimately connected with his understanding of attention. "Here poetic creation is conceived," Altieri writes, "more as the discovery and the disclosure of numinous relationships within nature than as the creation of containing and structuring forms" (17). As he concludes,

> Where the symbolist poet seeks to transform nature into satisfying human structures, the immanentist poet stresses the ways an imagination attentive to common and casual experience can transform the mind and provide satisfying resting places in an otherwise endless dialectical pursuit by the mind of its own essences and of Transcendental realities. (17)

And, what is particularly significant from the perspective of my argument, the creative self will be no more than an "attentive mind opening itself to the life of . . . familiar objects" (34), making the ego no more than "an intense form deepening one's participation in experience: an 'organ' responding and reacting to experience" (43).

Indeed, this is exactly what is happening in the Dickinson poem: the observer does nothing more than discover and disclose relationships within nature, mobilizing imagination attentive to casual experience that will transform the mind, whereby opening itself to familiar objects. The creative self will indeed be no more than an attentive mind opening itself unto the world. The ego becomes an organ responding to experience. That experience is common and casual and is clearly indicated by the random placing of the trees that surround the solitary acre containing the sun and the wind, together with their neighbor, God. God does not rule over this place, nor does he give it order; he is simply adjacent to it, connecting metonymically. Not only is there no visible divine order here, but human presence is also just about missing (except for the incidental passer-by or the boy). No human mind insists on deciphering God's message: the only meaning of this acre consists in is its mere existence, exhibiting inner, as opposed to outer form.

The scene informed by the four trees refers, in a self-reflexive manner, to the four-line stanza, while *acre* and *plan*, words made up of four letters, mark out the place or space of the poem, its inner and outer landscape just being carved out by the composition. As such, the organicist

metaphor of the four trees folds exactly that compositional process as outer image as the metonymical structure realizes. What is emphatically missing from the poem is the self-expressive lyric I, which might take control, from the position of the center, of the landscape. The voice we hear in the poem is no more than the observer of natural processes, the viewer who establishes contact without giving human interpretation to the acre occupied by the trees.

As to poetic form, one might first note the freedom with which Dickinson dismisses formal orthodoxies. Neither the number of syllables (10-4-9-2, 9-2-7-2, 6-9-9-2, 12-2-10-2), nor the number of stresses or accents (5-2-3-1, 4-1-3-1, 3-4-3-1, 4-1-3-1) exhibit any kind of regularity. The two-syllable lines occurring in certain even numbered lines of the stanzas (lines 4, 6, 8, 12, 14, 16) seem to make up the only recurrent prosodic formula throughout the poem. Indeed, "the irregular pattern of alternate long and short lines," as Cristanne Miller observes, "makes the poem read like free verse" *(Reading* 235).

Moreover, in one variant of the poem, Dickinson commits a particular grammatical error in failing to differentiate between transitive and intransitive verbs and using a transitive verb as intransitive.

> Four Trees – opon a solitary Acre –
> Without Design
> Or Order, or Apparent Action –
> Maintain – *(Poems* 733)

In this elliptic parataxis the verb *maintain* is lacking its object, whereby the poet violates a basic rule of syntax. The common observance of this rule is replaced by the contingent placement of words, resulting in a loose syntactic structure that remains ambiguous throughout. For it is unclear where one sentence ends and another begins. In fact, two sentence structures get superimposed upon each another, with the phrase *apparent action* capable of connecting with either the preceding or the subsequent syntactic elements. In the first case, *apparent action* can be read as the last item of the list "*Four Trees* [reign] *opon a solitary Acre – Without Design Or Order, or Apparent Action*," resulting in a violation of the rule of transitivity in the next line, containing the transitive verb *maintain.* Therefore, our language competence suggests that *apparent action* connects to *maintain* as its object: *Four Trees . . . Without Design Or Order, Or* [without] *Maintain*[ing] Apparent Action. However, as we read on, the first word of the next stanza,

sun, exhibits a similar unresolvable ambiguity in the sense that *sun* can either act as the subject of the next sentence (*The Sun – upon a Morning meets them*) or the object of the previous sentence, completing it into *Four Trees . . . Maintain the Sun*. In this somewhat uncanny structure, which Miller calls "syntactic doubling" (*Emily Dickinson* 37), the sentences seem to be shoved into each other, and the reader can never be sure where syntactic breaks fall. One might claim that Dickinson frees language of its syntax here, allowing words to interact with each other of their own volition, so to speak, making for a readerly undecidability. The poet, as Mallarmé writes, "yields the initiative to words" (208), allowing textual space to act and create a once and accidental pattern much like the acre allows the trees to create their own order.

In this remarkable poem, the attentive mind opens up to take in what is in front of the senses. While the self is withdrawn, the mind is ready to be absorbed by the world. The sensory process turns into an intellectual one, as the speaker opens up to be absorbed by the scene, while celebrating an absence of (humanly perceivable) order, from which the center has disappeared, and relations are reduced to contiguity and metonymy. While grammar is ambiguous, and syntactic rules are violated, neither meter, nor line length is regular. The poem creates its own free form.

Modernist poetics of attention

With Emily Dickinson as its nineteenth-century pioneer, the poetics of attention did indeed open to the world. Early modernism followed suit, with Imagism and radical modernism placing attention on the world in the center of their poetics. The practice of poetry was radically transformed by the Imagists' impetus to turn poetic attention from the self to the world. The time is the 1910s, the years when modernism was being born. This is the decade, when, as Virginia Woolf succinctly put it, "human character changed" (4).

What happened at that time? First, in 1910, the Post-Impressionist exhibition opened in Grafton Gallery, displaying works of Manet, Cézanne, Gauguin, Van Gogh, and Matisse. In 1911, Diaghilev's Russian Ballet performed in London, introducing the audience to the radical ideas of modern dance. New York's exhibition-going audience was shocked, in 1913, by the Armory Show, sensitizing them with Braque, Picasso, Max Ernst, Picabia, and others. The Show's most scandalous piece was, perhaps, Marcel Duchamp's *Nu descendant un escalier* [Nude Descending a Staircase], which transformed movement into abstract form, thereby making modern art's

break with realism final and irreversible. In a couple of years, another, still more scandalous work came to be the talk of town, Duchamp's *Fountain*, whose photograph was exhibited by Alfred Steiglitz in his Gallery 291 in New York.

The Imagist movement took root in this cultural climate, positing—in the manner of contemporary visual arts—the (visual) treatment of everyday objects and situations as the proper subject of poetry. Insisting on the "direct treatment of the thing, whether subjective or objective," as Ezra Pound's "A Retrospect" puts it (36), the Imagists insisted on sticking to what was in front of the senses, especially the eyes, allowing perception to turn into the poet's primary creative faculty. For this reason, Imagist poems are short, clear-cut, registering the objects of attention and perception without interpretation and without the involvement of the lyric I. Only this way will poetry, as T. E. Hulme put it in his "Romanticism and Classicism," "arrest you, and to make you continuously see a physical thing, to prevent you gliding through an abstract process" (79).

This cultural climate seems to have permeated all of Europe, from London to Paris to Moscow. In London, T. S. Eliot insisted that the task of poetry is to wake up its readers and help "to break the conventional modes of perception and valuation . . . and make people see the world afresh" (155). In Paris, Jean Cocteau wrote,

> Suddenly, as if in a flash, we *see* the dog, the coach, the house for the first time. Shortly afterwards habit erases again this potent image. We pet the dog, we call the coach, we live in a house; we do not see them anymore. . . . Such is the role of poetry. It takes off the veil, in the full sense of the word. It reveals . . . the amazing things which surround us and which our senses usually register mechanically. Get hold of a commonplace, clean it, rub it, illuminate it in such a fashion that it will astound us all with its youth and freshness, with its primordial vigour, and you shall have done the job of the poet. (qtd in Erlich 179–80)

At around the same time, the Russian Formalists in Moscow formulated similar principles about the necessity of poetry to make people truly see again. As Viktor Shklovsky explains, "People living at the seashore grow so accustomed to the murmur of the waves that they never hear it. By the same token, we scarcely ever hear the words which we utter . . .. We look at each other, but we do not see each other any more. Our perception of the world has withered away, what has remained is mere recognition" (qtd in Erlich 176–77).

The task of poetry, then, is to make us see or hear objects and phenomena as if for the first time. To bring an image or sound into the sphere of fresh perception, with the added task of the poet to register the moments of heightened perception so that the mind might take possession of it. Because great art, according to this philosophy, is primarily a matter of perception, of noticing what lies around us. This is what Williams Carlos Williams does in his best-known poem, "The Red Wheelbarrow," which so blatantly redirects attention from the poetic self to an object in the world, while relying on pure perception as the primary creative faculty.

> so much depends
> upon
>
> a red wheel
> barrow
>
> glazed with rain
> water
>
> beside the white
> chickens *(Collected Earlier* 277)

What depends on the red wheelbarrow is exactly its perception, its recognition. As Burt Hatlen points out, what the poem foregrounds is the return of "our attention to the concrete particulars of the world, to see these particulars anew and to allow these particulars to form new configurations," identified as modern poetry's predominant distinguishing feature (Hatlen 159, qtd in MacGowan 90). As Christopher MacGowan cites Hatlen, "'The Red Wheelbarrow,' most famously, reminds us that 'so much depends / upon' summoning us 'back to the concrete particulars of the world'" (MacGowan 90; Hatlen 160). The modern poet must teach us to see the familiar as unfamiliar, and to bring it into the sphere of perception, thereby to see this everyday object as if for the first time, allowing for the Jamesian transition from a sensory experience to an intellectual one.

Ezra Pound's "Pagani's, November 8" is another piece informed by this philosophy:

> Suddenly discovering in the eyes of the very beautiful
> Normande cocotte
> The eyes of the very learned British Museum assistant. *(Selected Poems* 151)

What we do not have in this poem is the self-expression of the lyric I, explanation, or interpretation. What we do have, however, is observation, perception, the surprise of recognition, together with the economy of words and the intensity of visual experience. At the time when Victorian lyric rhetoric still reigned, these poems offered density of diction and precision of observation, features whose prerequisite is the withdrawal of the self, allowing for the objective perception of the outer, empirical world.

A respect for the quotidian informs Williams's general poetic attitude. The famous Williamsian dictum, "no ideas but in things" *(Paterson* 6), emphasizes exactly this groundedness in the objective world. For example, "This Is Just to Say" *(Collected Earlier* 354), his famously "light" poem, aims at no more than what it is, the registering of a most everyday situation. It is the speaker's message left on the kitchen table, an apology and a conveying of the simple delight gained from eating the plums. And although it is an apostrophe written in the first-person singular, it is by no means self-reflexive; the intersubjective act of apology turns attention emphatically outside, to the delicious, sweet, and cold plums. To take another example, "Pastoral" *(Collected Earlier* 121), which might be read as the explicit unpacking of the philosophy implicitly contained in "The Red Wheelbarrow," claims that the pleasure gained by perceiving the everyday secures not only personal happiness but also the happiness of the community, the nation. In a typical Williamsian tone, the poet searches for the answer to the age-old question of what our mission (or simply job) in the world is. While speaking in the first-person singular, he proposes to look outside: to notice simple images, to appreciate simple pleasures that will build the particulars of place, community, and nation.

His "Young Sycamore," written after Stieglitz's photograph *Spring Showers,* demonstrates this way of seeing, the recreation of a tree by visual perception registering, as Bram Dijkstra explains in his seminal book, *The Hieroglyphics of a New Speech*, what "the camera eye of his own imagination" (191) saw.

I must tell you
this young tree
whose round and firm trunk
between the wet

pavement and the gutter
(where water
is trickling) rises
bodily

into the air with
one undulant
thrust half its height-
and then

dividing and waning
sending out
young branches on
all sides –

hung with cocoons
it thins
till nothing is left of it
but two

eccentric knotted
twigs
bending forward
hornlike at the top *(Collected Earlier* 332)

Given the fact that the poem, as an imprint of what psychologists call "object-driven attention" (see LaBerge 158), offers a poetic version to the Stieglitz photograph, the processual nature of the text—that the poem can be read, as Perloff insists, as foregrounding "emphasis on process rather than product, on the act rather than its consequence" ("Poetry Chronicle" 129)—begs explanation. For, indeed, the successive lines bring about, in a performative manner, the actual tree, branch by branch, twig by twig. This dynamic poetic process—as opposed to the static visuality of the photograph—can only be partly explained by the nature of language, its linear and processual arrangement transmitted to poetic lineation; concrete poetry, as I will show later, manages to discard this inherent processual

nature of language. But this is a poem that follows the steps of attention, realizing the unity of the eye and the image. Adhering to the movement of the perceiving eye, attention as act and process informs lineation, until the mind, absorbed by the world, takes possession of the tree. So that the image gains its significance from becoming lived experience, one now living in the mind.

A glance at the form of the Williams poems discussed will reveal a very particular correspondence between grammar and prosody. In "This Is Just to Say" only at one line-ending ("that were in / the icebox") does the noun phrase break, where it is not syntax that determines prosody. But this break after the preposition is perfectly normal in everyday speech. In "Pastoral," with all line-breaks coinciding with grammatical breaks, Williams goes even further, putting prosody under the total control of grammar. "The Young Sycamore" is a little more complicated grammetrics-wise, with several non-coincidences between prosody and syntax ("between the wet / pavement and the gutter"; "(where water / is trickling) rises / bodily"; "into the air with / one undulant / thrust half its height"; "young branches on / all sides"; "but two / eccentric knotted / twigs"). While line-breaks overwhelmingly coincide with grammatical breaks, where they do not—where lines break within syntactic units—there too, the pauses suggested by stanza breaks or line breaks are totally acceptable in everyday speech. Such non-coincidences are places where lineation overrides grammar without, however, disrupting the natural intonation of ordinary speech. Everyday speech here is hesitant, unsure, even groping, showing a mind who thinks while speaking, and which, for this reason, can stop within noun or verb phrases.

Based on this cursory overview of the formal features attending radical modernist poetics, one can conclude that two processes are happening simultaneously here: as the so-called lyrical self is withdrawn and poetic attention is directed on the world, language takes control over prosody.

Concrete poetry

As opposed to traditional lyric poetry, concrete poetry relies on the interplay of the semantic content and the visual qualities of words, while the representational potential of language is significantly challenged as language provides constituents for a concrete poetic object. The poem becomes a visual product in which language is broken down into its components, while it falls under the control of the dimensions of space.

Language ceases to be a transparent medium but becomes an object in which words and letters become visible in their objecthood. As such, concrete poetry radically undermines the subjectivity of the lyrical self, if for no other reason than because complete sentences are most often avoided, making it impossible for the grammatical subject to show itself.

Concrete poetry exploits the performative potential of language as it makes objects with concrete physical dimensions, word-objects, out of the language material. This linguistic material becomes an object that is both linguistic and physical, for on the one hand, it is made of elements of language, while on the other, as a physical object, it will be one of the objects of physical reality. Moreover, concrete poetry brings together the semantic content of language and its written or printed visual objectivity, thereby realizing Paul Valéry's dictum about literature being an "extension and application of certain qualities of language" (85). As such, concrete poetry makes language spatial, while also making objects out of letters and words, and turning linear reading into spatial experience, which demands a perception very similar to the perception of visual art objects.

I differentiate between two kinds of concrete poems, depending on whether they exploit the nominal or verbal elements of language. Adopting the linguistic terms, I call them topic poems and comment poems, the first making objects out of the nominal elements of the statement, the second out of its verbal elements. Both produce reductionist-minimalist texts, but while in the first case the end-product is an autonomous object (a nominalized topic lacking a predicate, the comment), in the second it is a comment-like process (complete even without the nominal element, the topic).

Topic poems rely on the "nominalism" of Pound's ideograms, to use Marjorie Perloff's term ("Search"), as, for example, Mary Ellen Solt's "Forsythia," made of letters and Morse-code signals, and "Geranium," constructed out of letters, with both giving out the shape of the flower.

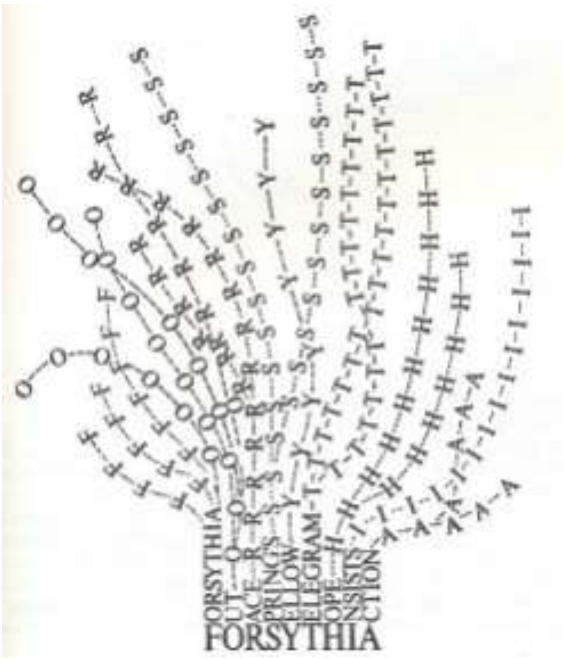

Figure 1.
Mary Ellen Solt, "Forsythia" (1965) (Klonsky 256)

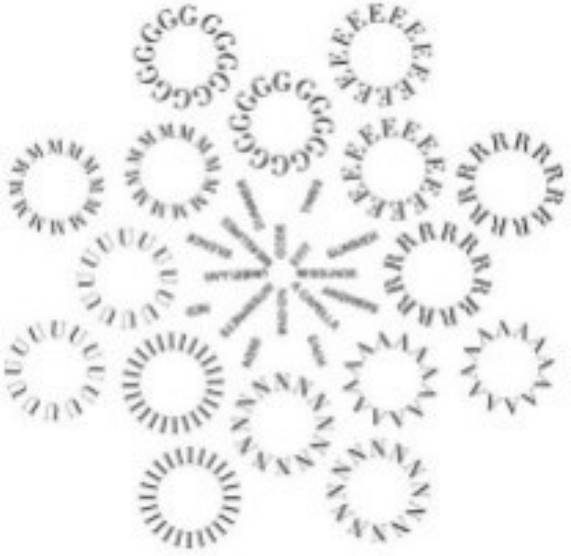

Figure 2.
Mary Ellen Solt, "Geranium" (1963) (Klonsky 257)

The Belgian visual artist Paul de Vree's "My Word Is My Sword" also falls into this category, constructing a word-object out of letters.

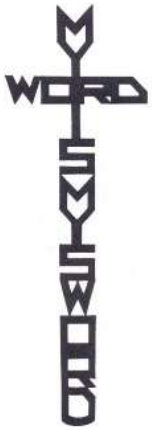

Figure 3.
Paul de Vree, "My Word Is My Sword" (1969) (Klonsky 255)

These static topic poems can be grasped instantaneously, providing a visual experience that is impossible to attain in linear reading. Comment poems, on the other hand, perform the verbal elements of the statements, fashioning them as act and process. In the Scottish poet Ian Hamilton Finlay's "Acrobats," letters do acrobatics as they jump up, down, and sideways, giving a comment-like performance of the topic of acrobatics.

Figure 4.
Ian Hamilton Finlay, "Acrobats" (1966) (Klonsky 251)

We are witnesses to a similar process in Emmett Williams's "Like Attracts Like," displaying a coincidence of the descriptive and performative function of language.

Figure 5.
Emmett Williams, "Like Attracts Like" (1958) (Klonsky 295)

What is most intriguing in this poem is that it performs the same act which it describes. Read as a description, *like* acts as a signifier, that of an abstract

concept capable of referring to an unlimited number of signifieds. Read as a performative, however, *like* is the signified itself: the word has become the "thing" that participates in its concrete materiality in the act of attraction traced here step by step in the consecutive lines.

Concrete poetry refuses to fulfill the mimetic-expressive function of lyric poetry; instead, it eliminates the self-expressive first-person subject while allowing the language material to take the place of the subject. Here too, the elimination of the lyrical self seems to go hand in hand with the disruption of regular poetic form: concrete poetry simply shatters the linear text. Which means, among others, that the text cannot be read out loud, cannot be performed as other poems can during readings, for example. As such, since it cannot be learned by heart, it does not comply with one of Jacques Derrida's requirement of "the poematic," (233), or the "poematic experience," which is the "dream of *learning by heart*" (231).

Concrete poetry breaks language into its constitutive elements, words, and letters, which can be meaningful, mostly on the morphological or lexical level, but rarely on the syntactic level. The two Mary Allen Solt poems, the Ian Hamilton Finlay poem, as well as the Paul de Vree and Emmett Williams pieces all resist the self-reflexive mode of the first-person singular; they each in their own way objectivize language and can best be approached by the "super close reading" of what Perloff calls "micropoetics," which is equally attentive to the visual and sound effects and the verbal elements. This reading focuses on the micro-elements of the text, where "every phoneme, every morpheme, word, phrase, rhythm, and syntactic contour" is examined with an eye to how "they create a brilliant verbal, visual, and sound structure" (*Infrathin* 2).

Language poetry, the case of Charles Bernstein

The language poets[2] represent perhaps the most radical form of both eliminating the lyrical self and adhering to a poetics of attention, which in their case means attention to language, as well as submission to language, the transferring of agency from the poet to language.

In direct lineage with the aesthetics of the radical avant-garde movements of the twentieth century—of Gertrude Stein, Jack Spicer, the Black Mountain poets, and the Objectivists—the poetic theory proposed by the language poets, and most prominently by Charles Bernstein, holds that language is not a transparent (and unperceivable) medium of self-expression and communication because there is no prior self or poetic theme or topic to be "expressed." Nor is there anyone at the other end of

the line: the receiver is "off the hook" ("The Lives of the Toll Takers"; *All the Whiskey* 150). Disclaiming the role of the lyric subject, this experimental poetics places the creative process under the control of language, thereby eliminating the self or persona, which formerly gave cohesion to the text, and allowing language to take over the central structuring function of the lyrical self. Language poets welcome the incidental order of linguistic elements or *non sequitur*s, which rhetoric handbooks consider fallacies, to be avoided at all costs. They see the blatant manifestation of language in such cases, which must be heard, since, they believe, language knows more than its speakers, and if the speaker wants to know that "more," they will have to interrogate language itself. Language never shows the world without itself being shown in the process. That is why when the poet speaks about the world, he always speaks about language as well.

Language is the frame and source of experience, Bernstein insists, while "experience is a dimension built into language" (*Content's Dream* 35). In order to engage with language, the poet must find ways to foreground the materiality of language, and thereby demonstrate its non-transparency. The chief innovation of the language poets lies here, in ways of making use of the non-transparent nature of language, whereby attention may fall on language itself. "[T]he movement," writes Bernstein, "is toward opacity/denseness—visibility of language through the making translucent of the medium" (*Content's Dream* 70).

Bernstein developed his aesthetics of language writing by using Wittgenstein's philosophy of language as a foundation by appropriating, among others, the philosopher's idea of the speaker locked inside language. Accepting Wittgenstein's well-known axiom, "[t]he limits of my language mean the limits of my world" (*Tractatus* 5.6), Bernstein insists that the relation of language to the world does not consist in language "accompanying" thought, but in language being thought and thinking itself. It is language that contains the world, not vice versa. "Truthfulness, love of language: attending to its telling" ("Palukaville"; *All the Whiskey* 31). "When I think in language, there aren't 'meanings' going through my mind in addition to the verbal expressions: the language is itself the vehicle of thought," he quotes Wittgenstein (*Philosophical Investigations* §329; *Content's Dream* 62). Language, therefore, is really the space or territory within which the world exists, and meanings enter the world exclusively through language.

"My aim in poetry is to show the fly it's in a bottle," Bernstein writes in his preface to the Hungarian collection of his poetry ("To the Reader" 9), echoing Wittgenstein's famous remark, "What is your aim in philosophy? To

show the fly the way out of the fly-bottle" (*Philosophical Investigations* §309). As opposed to philosophers, however, poets know, he insists, that there is no way out of the bottle. For this reason, the language text is never about something, it has no content to be paraphrased, no symbols and other tropes to be interpreted, and certainly no lyric I. Therefore, the job of the language poet is to bring about a consciousness of language in readers, to help them notice language, whose transparency was so naturally assumed. The poet will do this by "the sounding of language from the inside," as Perloff puts it (*Dance* 221), feeling out the lumps as in wood, places where the material thickens. It is these lumps that make it nontransparent, visible. Bernstein calls these visibility spots "typographicities" and "syntaxophonies" (*Content's Dream* 73), of which there are many, one just needs to notice them, sound them or feel them out. The poet who once made a living by writing and editing medical texts applies the medical term *dysraphysm*, meaning the "dysfunctional fusion of embryonic parts," to such spots of visibility in general, spots of "mis-seaming" of components in the texture of language, insisting that dysraphysm is "a prosodic device" (*The Sophist* 44).

Everything that is unusual or irregular counts as dysraphism, which makes language visible and deprives it of its medial transparency. He not only enjoys these irregularities but considers them utterly meaningful too. "Interruption and inscrutability enthrall me," he writes in his preface to his Hungarian collection ("To the Reader" 9). In line with the thinking of the Russian Formalists, Bernstein understands such irregularities as defamiliarizations and estrangements: they defamiliarize what is familiar and denaturalize what is natural, making even the mother tongue strange. As if Proust's famous aphorism, which claims that the language of all beautiful books sounds necessarily "strange," had been put into practice (305). In consequence, whatever was invisible and unperceivable now comes to the foreground. This is why Bernstein is so eager to create puns and construct other presumed "anomalies" of language; that is why he does not correct his typos (or probably even makes them consciously)—so that all the nodes, lumps, and gnarls that are normally smoothed out from the texture of language would show and help reveal meanings that otherwise would not surface. For no matter how little sense *non sequiturs* or puns or homonyms make, they still make *some* sense. As he writes in "The Lives of the Toll Takers,"

There is no plain sense of the word,
nothing is straightforward
description a lie behind a lie:
but truths can still be told. (*All the Whiskey* 172)

Elliptic condensation will often create syntactic doubling, where one syntactic unit can go either way, rounding off the preceding structure or beginning the subsequent one. Moreover, by typographically marking deletions, as he does in "Standing Target," for example, he makes clear that empty spaces are not totally empty but contain traces of words fallen through the cracks of language.

fatigue
of of
open for
to , sees
doubles
glass must
are for
in : they
are , her
that it
watches, leaves,
days that
made
and the (*All the Whiskey* 64)

At first reading, this poem seems to register a deterioration of language (much like those humorous demonstrations of the step-by-step corruption of internet English): how sentences fall apart so that only (or mostly) function words and punctuation marks remain. As such, the lack of semantic content makes it impossible to decipher any "meaning" in the usual sense. However, with typography giving instructions as to how to read the poem, the words that have not fallen through the gaps receive extra weight. For typography tells us to pause at gaps but stress words that come after such pauses; while the pauses slow down the reading, the stress given to each remaining word gets even more acute. What is especially important is that with such indirect reading instructions, we must give weight to function words too, which are otherwise not stressed (when they are simply fillers between full words). So, it turns out that language does not fall apart

here but quite the opposite, it rebuilds itself like a lizard after having its tail cut off. The remaining words get additional weight, both full and function words. The distinction between the two gets eliminated, and with the doing away of sentences, the single word or morpheme emerges—with its tactile, sound, and visual materiality as well as its taste—as the basic unit not only with a life of its own but also to serve as the blocks of a language rebuilding itself. For it is not the poet who is the building agent here but language itself: the poet simply allows the lizard of language to regrow its sentences. But he has no voice in the process; the lyrical self is completely eliminated from this poetic exercise.

Bernstein has come up with another way of muting the poetic voice, or the voice of the lyrical self, which one might call polyphonic intertextuality. Discourses in the individual poems are overwhelmingly plural, ranging from the serious to the playful, from the tragic to the sarcastic. The distinctiveness of the applied registers usually comes from the foreign texts that get incorporated by quotation, citation, allusion, or evocation. In these recyclings, readers may identify not just quotations but textual residues, resonances, and ekphrases, in which the boundaries between the poet's own text (the one being written right there) and the texts appropriated from others (those that have already been written) become blurred. By admitting foreign materials into the language of the poem and containing simultaneously the language objects he "found" in the world outside, as a screen through which to read, he postmodernizes the modernist *objet trouvé*.

We can find examples for all kinds of allusions in Bernstein's poetry. The volume *All the Whiskey in Heaven*, for example, abounds in references to the Black Mountain poets (Olson, Duncan, Creeley), Thomas Cole, Simone de Beauvoir, Janis Joplin, Ezra Pound, the Apostle Paul, Villon, Shakespeare, Socrates, Marx, Machiavelli, Bing Crosby, and Robert Frost. Among such ekphrastic writing, when other texts are evoked through which the poems proceed, we have, in the volume *Recalculating,* texts written in the style of Thomas Campion, Leevi Lehto, Sylvia Plath, Douglas Messerli, Wallace Stevens, Whitman, and Wordsworth, mixed with translations, or transplantations, of Fernando Pessoa, Osip Mandelstam, Régis Bonvicino, Velimir Khlebnikov, Victor Hugo, Baudelaire, and Apollinaire.

Discursive polyphony will serve as the source of Bernstein's distinctive humor. Perhaps his humor is most strident when clichés and other bits from popular culture merge with the poetic and the serious. Any reader would complete the phrase *blue suede* with *shoes*, but in "The Klupzy

Girl," Elvis is forgotten, and *blue suede* will refer to *pestilence (All the Whiskey* 88). In "Dysraphism," the sentence "Reality is always greener" evokes the neighbor's yard *(All the Whiskey* 118); while we hear the nursery rhyme "There was an old woman who lived in a shoe" beneath the lines "There was an old lady who lived in a / zoo" and its further distortion, "There was an old lady / who lives in a stew" *(All the Whiskey* 153–54).

Given the fact that the nodes and lumps in language come about from the meeting of texts, polyphonic intertextuality is a well-functioning form of dysraphysm, which is why Bernstein is so fond of ironically-humorously overwriting aphorisms, axioms, sayings, proverbs, and slogans. For example, Bernstein alters the words of Jesus, "it is easier for a camel to go through the eye of a needle than for a rich man to enter the kingdom of God" (Matthew 19:24):

> Harder for a rich man to read a poem than
> for a hippopotamus to sing bel canto.
>
> ("Reveal Codes"; *All the Whiskey* 193)

He also changes the familiar teaching of the Apostle Paul on all being one body in Christ (1 Corinthians 12:12) into "We may be all one body but we're sure as hell not one mind" *(All the Whiskey* 177) or he gives the peculiar contextualization of the postmodernist doctrine as "The Jew is a textual construction" ("Recalculating"; *Recalculating* 177).

The linguistic-cultural humor so pervasively present in Bernstein's poetry is most obvious in his aphorism poems. "War Stories," for example, is written almost completely in such distorted, overwritten aphorisms—even if the intertextuality is not the source of humor but of tragedy *(All the Whiskey* 283–90). We seem to laugh when reading "Foreign Body Sensation" because every sentence is a cliché, foreign linguistic body incorporated into the poem, borrowed from talk shows, blogs, where media heroes publicly admit some very private secret and give a latter-day conversion narrative of how their lives have changed *(All the Whiskey* 139–49). The multiple aphorisms of the prose poem "How Empty Is My Bread Pudding" evoke a whole culture, confronting the reader with the lies behind the clichés generally taken for granted *(All the Whiskey* 81–91). Here "[p]oetry is too important to be left to its own devices" (82) applies Clémenceau's famous sentence ("War is too important to be left to the generals") to poetry. Behind "Sometimes a cigar is just a symbol" (84) there resonates not only Freud's well-known maxim ("Sometimes a cigar is just a cigar") but also see Magritte's pipe or non-pipe

("Ceci n'est pas une pipe"). The line "Two prosodies diverged in a striated field" (86) evokes Frost's "The Road Not Taken"; with "Make love not unilateralism" (90) we associate the sixties slogan, "Make love not war". Hearing "No man is a peninsula entire unto itself" (91) we immediately hear John Donne's familiar line, "No man is an island, entire of itself"; while "The pen is tinier than the sword" (91) clearly cites the proverb, "The pen is mightier than the sword." Such citations, near-citations, allusions, and textual residues seem to amplify the undecidability of the text, adding new quotation marks to the already questioned—because overwritten and appropriated—lines, sentences, clichés, and axioms.

These radical departures from the norms of language contribute to what Bernstein calls imploded sentences, sentences that are fragmentary, broken, associative, acrobatic, cumulative, incomplete, and without closure, as well as rough, knotty, lumpy, and gnarled, resisting the "syntactic ideality" of the complete sentence. They are very much alive too, the word *sentence* being a near homonym of the word *sentience*, he claims ("Recalculating"; *Recalculating* 177). As he writes,

> Clark Coolidge's improvisatory extensions of the line refuse the closure of the subject/verb/object sentence; refuse, that is, the syntactic ideality of the complete sentence. . . . In imploded-sentence poetry, meaning flows durationally—*horizontally*—by means of the linear continuousness of the sweeping, syncopated rhythms. While in the complete/closed sentence, attention is deflected to an abstracted, or accompanying, "meaning" that is being "conveyed," in the imploded sentence, the reader stays plugged in to the wave-like pulse of the writing. In other words, you keep moving through the writing without having to come up for ideational air: the ideas are all inside the process. (*Artifice of Absorption* 37)

Indeed, imploded sentences might resist "syntactic ideality," the rules of (semantic) selection and (syntactic) combination, in varying degrees, as well as rules of text grammar demanding that consecutive sentences are semantically related.

"The Klupzy Girl" is a classroom example of Bernstein's language writing in imploded sentences. Its interpretive reading must take a mode very different from what we are used to, given the fact that the poem resists reading for sense, and therefore no paraphrase can be given that might do justice to it. Our reading of such a "difficult poem" (see the essay "The Difficult Poem"), as he admits his imploded sentence poems are, must rely on the assumption that poetry is neither self-expression nor expression; no

transcendental ego preexists the poem (one that could give cohesion to the lines), and, given the avoidance of referentiality, no topic can be deduced from the sentences. Here are the first twenty-eight lines of the long poem:

> Poetry is like a swoon, with this difference:
> it brings you to your senses. Yet his
> parables are not singular. The smoke from
> the boat causes the men to joke. Not
> gymnastic: pyrotechnic. The continuousness
> of a smile—wry, perfume scented. No this
> would go fruity with all these changes
> around. Sense of variety: panic. Like
> my eye takes over from the front
> yard, three pace. Idle gaze—years
> right down the window. Not clairvoyance,
> predictions, deciphering—enacting. Analytically,
> i.e., thoughtlessly. Begin to push and cue
> together. Or I originate out of this
> occurrence, stoop down, bend on. The
> Protest-ant's voice within, calling for
> this to be shepherded. For moment's
> expression's enthroning. Able to be
> alibied (contiguity of vacuity). Or
> telepathetically? Verena read the epistle
> with much deliberateness. If we are
> not to be phrasemongers, we must
> sit down and take the steps that will
> give these policies life. I fumbled clumsily
> with the others—the evocations, explanations,
> glossings of "reality" seemed like stretching
> it to cover ground rather than make
> or name or push something through. (*All the Whiskey* 84)

The first sentence is just about the only normative or, as Bernstein puts it, "complete/closed sentence"; here the academic poet gives his thesis sentence to the lines that follow, explaining, in his own manner, how poetry brings us to our senses. The coincidence of prosody and grammar in the first line gives weight to his assertion while demanding slow comprehending reading, with a pause at the end. However, only the first and last lines are end-stopped; all the others are run-on, with line endings cutting into the middle of noun and verb phrases, even prepositional phrases. The units separated by full stops are

sentences or noun and verb phrases; each syntactic unit is a one-line long total, but each begins towards the end of one line and continues until two-thirds or three-quarters of the next. This grammetrical structure of non-coincidence between prosody and grammar contributes to the "durational" or "horizontal" flow of meanings that Bernstein found important to emphasize in his description previously quoted. The wave-like structure evolves from the speed of the sentences and phrases: right after one ends, the next begins without stopping, performing indeed the movement of waves.

The sentences and phrases themselves give the illusion of grammaticalness: they look like normative units, at least upon first glance in that they follow the rules of the English sentence in, for example, terms of agreement (plural subjects get verbs in the plural): "his / parables are not singular"; "The smoke from / the boat causes men to joke"; "I originate out of this / occurrence." However, with an obeyance to rules of combination, only the structures are normative, while—since the rules of selection are disobeyed—the semantics of these complete/closed units does not give out meaning or sense. There is no way to catch the meaning of "his / parables are not singular"; to imagine how "The continuousness / of a smile" is "scented"; how "my eye" might "take over from the front / yard"; or how a "moment's / expression" might be "enthroning." Yet we do take away something from the poem, for the observations, as *unheimlich* as they are, do contribute to a woman's portrait. We sense, for example, that she prefers sameness ("Sense of variety: panic"), that she lived her years in "idle gaze," and that the scent of her smile is fruity. Given these features, we begin to see her, as Jerome McGann points out, "for what she is, for what she's *doing*" (722). This world "can only be explained in its own terms," McGann continues, "from what Rosetti called 'an *inner* standing-point'" (723).

What is at least as important as semantics in the poem is the sheer pleasure we get from the waterfall of short observations. The source of this pleasure lies in the words, as the reader experiences their materiality, their mouthfulness, so to speak. This then is intensified by unexpected correspondences such as internal rhymes *(smoke—boat—joke; contiguity—vacuity)*, alliterations and assonances *(able—alibied, evocation—explanations)*, word plays and creative innovations *(Protest-ant, phrasemonger),* play with long words *(parables—singular; gymnastic—pyrotechnic; contiguity—vacuity)* and short words *(push—cue; idle—gaze—years; stoop down—bend on)* as well as with metaphorical and literal meanings *(stretching it—to cover ground)*. As we read on, we are more and more absorbed by language, while the words more and more enact the girl so that we experience her in language. It is the overall pleasure taken in

language that becomes the most important character of the Klupzy girl: contained in language, she becomes pleasure materialized as words.

It is important to note that not only do individual syntactic units disobey the rules of semantic selection but also the sequence of sentences. In other words, the whole sequence does not "make sense" from a text grammar perspective either. The order of sentences is incidental and contingent; parataxis is the overwhelming structural principle, simply allowing sentences and phrases to follow one another, in a *non sequitur* manner. Having given up trying to find meaningful connections between units separated by full stops, the reader surrenders to language, yields to being absorbed by language, thereby appropriating the pleasure of the Klupzy girl—probably even becoming her via this absorption.

As we read one line after the other, we begin to understand the claim made in what I called the poem's thesis sentence, the first line and a half (three-quarters, to be precise), setting the whole section in motion: why poetry is "like a swoon," with the difference that "it brings you to your senses." Swoon as a state caused by poetry belongs to the traditional understanding of the power of language and music both the poet and the reader experience in poetry; it is the perlocutionary effect the lyric has been held to have on its listeners. For the language poet, however, and certainly in this language poem, another meaning is foregrounded: the state of being deprived of control, of agency, and for this reason undergoing some "rapturous emotion" (as I found in a 1953 *Webster's New World Dictionary* under the entry "swoon"), as well as "admiration" and "adoration" (which a recent Google search brought up for "swoon"). The second part of the definition is even more important to the language poet: that poetry brings us to our senses. Here, at least two meanings of the phrase "brings you to your senses" are involved: one is the surprise arousal that unfamiliar and even bizarre lexical combinations might provoke, while the other is the awakening of all the senses in the experience of language. The former is a common reaction, when we wake up, startled, from the stupor of the quotidian by an atypical and uncanny comment; the latter is a response carefully administered by the language poem to involve all our senses when experiencing language.

Bernstein's imploded sentence is a most radical poetic device for several reasons. For one, while disregarding the "syntactic ideality" of English, it gives space for the pleasure of language to accelerate. The poem becomes an experience, a material assemblage that we apprehend with our senses. But this is not all; it realigns the balance between poetic self and poetic language, on the one hand, and grammar and text, on the other. As to the former, in lyric

poetry the lyrical self acts as the agent who controlled language, structured the text, and "expressed" some subjective vision in figurative language. In language writing the poetic self disappears while language takes over the control of the text. As to the latter, the violation of the rules of grammar does not happen for itself but in order that we may avoid thinking and speaking in patterns and structures that preexist our sentences in which the actuality of the meanings suffers. In short, in imploded sentences the two processes I surveyed in my essay meet: the elimination of a pre-existing poetic self and the elimination of a pre-existing form, grammatic and poetic alike.

Conclusion

The poetries I have surveyed represent various modes of breaking with the subject as well as breaking with form. Dickinson, we saw, launched a particular attention to scenes devoid of human presence, while not only did she break with regular meter and form, but also liberated her poetry from the rules of syntax. The Imagists, following this poetics of attention of the receding self, chose grammar as the governing formal principle (instead of regular meter and stanzaic form), subordinating prosody to grammar. Concrete poetry did away with the first-person singular by replacing the linear sentence with the concrete image, time with space, which also eliminated the possibility of regular form. Finally, language poetry eliminated both self and form by placing the process of writing under the control of language, replacing the self with language both as the organizing principle of the text and as the object of poetic attention. In short, the radical tradition I have discussed is informed by the double gesture of eliminating the lyrical self, on the one hand, and first the loosening, then the doing away with regular form, on the other. That is, the destabilization of the lyrical self has led to various modes and degrees of free verse, as well as to violations of rules of grammar, indicating that self and form are integrally related.

Eötvös Loránd University, Budapest

Enikő Bollobás, Professor Emeritus at Eötvös Loránd University, Budapest, corresponding member of the Hungarian Academy of Sciences, and editor-in-chief of the Academy's monthly journal *Magyar Tudomány* [Hungarian Science]. She has written monographs on American free verse and non-lyric poetries (Akadémiai, 1986 and 2020), as well as on the poets Charles Olson (Twayne, 1992) and Emily Dickinson (Balassi, 2015); two histories of American literature (Osiris, 2005 and 2015); and theoretical

inquiries into poetics, subjectivity, and performativity (Eötvös 2021; Balassi, 2020; Balassi, 2015; Peter Lang, 2010). Her numerous essays have appeared in international and Hungarian scholarly journals, among them, *American Quarterly*, *Arcade*, *The Emily Dickinson Journal*, *Journal of Pragmatics*, *Paideuma*, *Language and Style*, *Word and Image, HJEAS,* and *Americana.*

Notes

1 I will not touch upon other ways of "getting rid of the lyrical interference of the individual as ego" or of the "alternatives to the ego-position," as Charles Olson famously puts it in two foundational essays, "Projective Verse" and "Mayan Letters" (*Selected Writings* 24; *Mayan Letters* 83), such as the long poem, the serial poem, and the prose poem. On the "larger forms" of the serial poem as modes of shifting to non-lyric forms, see Barbour, esp. 7–32.

2 Or *L=A=N=G=U=A=G=E* poets, if the name refers not to the attachment to language of the so-called language poets but to the journal they gathered around.

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Once Upon a Blind Girl: Disability and Fairy Tale in Charles Dickens's *The Cricket on the Hearth*

György Kiss

ABSTRACT

The paper offers a close reading of Charles Dickens's Christmas novella, *The Cricket on the Hearth: A Fairy Tale of Home* (1845), through the lens of fairy tales and disability studies. One of the main characters of the story is Bertha Plummer, a blind doll's dressmaker. Since her father deceives and hides the truth from her, Bertha is unaware of the real nature of her economic and social circumstances as a disabled, working-class woman. Her disability is crucial to the plot as it is strongly connected to the novella's themes of domestic infidelity, disguise, and the lack of perspective or understanding. The paper analyzes how Dickens explores these ideas through Bertha's blindness with the use of fairy tales. It relies on academic sources written about Bertha, fairy tales, as well as disability and Victorian gender roles. (GyK)

KEYWORDS: disability, fairy tale, Charles Dickens, blindness, Victorian, gender

The literature of the Victorian period abounds in disabled characters. Often, they are not in the forefront: fictional figures with signs of physical Otherness, disfigurement, and bodily impairment are usually hidden in the shadows of traditional, able-bodied protagonists. As Martha Stoddard Holmes argues, even though they might be only in the background, disabled characters perform "an astonishing variety of narrative work, the social identity arising from their impairments actually *enabling* them to play a host of necessary plot roles. Perhaps unsurprisingly, this is not in spite but rather because of their exclusion from certain plot-lines" (63). Clare Walker Gore similarly points out that even though disabled characters in Victorian novels are often unable to do physical work or gain a profession because of their weak constitution, on a textual level they are "working all the time to keep the wheels of the plot grinding—working, in other words, to make the novel work"[1] (*Plotting* 3).

Charles Dickens frequently portrayed various forms of physical deficiencies in his works. It is difficult to draw a general conclusion about his disabled figures: they are as diverse and complex as the author's able-bodied characters. *The Old Curiosity Shop*'s misshapen dwarf, Mr. Quilp, is sadly used as an image of immoral monstrosity. Smike's portrayal in *Nicholas Nickleby* is similarly unfortunate: a cripple in a clear position (his disability never otherwise specified) who relies on the novel's titular hero physically and spiritually. In a sense, Tiny Tim in *A Christmas Carol* is a figure of pity as well, functioning as a tragic element in a sentimental plot. Nevertheless, there seems to be a gradual shift in Dickens's understanding of disability and bodily difference in his literary career: in *David Copperfield*, for instance, the initially ridiculed Miss Mowcher confesses to David later in the novel that her flighty manner and foolish behavior are only acts to deflect the public's attention from her dwarfism, a surprisingly unique and honest approach towards disability in the literature of the period. In *Our Mutual Friend*, Dickens's last completed novel, Jenny Wren's characterization is handled with even more care and depth: even though she uses crutches, she is no victim, but rather an active, working young woman with agency and independence. These attributes were often denied from earlier Dickensian disabled characters, like in the case of the fairy tale-inspired *The Cricket on the Hearth*'s blind Bertha Plummer. This paper analyzes how Dickens explores questions of gender and disability in Victorian society through the use of fairy tales, fairy-tale tropes and motifs in the aforementioned novella, especially through the character of Bertha. I look at European fairy-tale patterns, characters, and elements that either relate to the content of Dickens's novella or can be seen as potentially influential on his work, while also referencing disabled and physically Othered fairy-tale figures and characters from other works of Dickens and in the novels of some famous Victorian literary authors.

The subtitle of *The Cricket on the Hearth* is "A Fairy Tale of Home." It tells a parable about the sanctity of the home as well as a cautionary tale for those who might disturb this domestic peace. It centers around two relationships: that of husband and wife John and Mary (Dot) Peerybingle on the one hand, and Caleb Plummer and his blind daughter, on the other. Bertha's disability is crucial to the plot as it is strongly connected to the novella's themes of domestic infidelity, disguise, and the lack of perspective or understanding. All these ideas are explored within a fairy-tale framework with magical elements and otherworldly characters. Even though it does not take place during the winter holidays, the novella was published as part of

Dickens's five Christmas books. Preceded by the immensely popular *A Christmas Carol* and *The Chimes*, *The Cricket* was originally intended to be published periodically to put "the homely ideals of the *Carol* into wider circulation" (Douglas-Fairhurst xxii). This authorial wish remained unfulfilled, and consequent Christmas books tended to shift their focus away from the domestic: *The Battle of Life* tells a sentimental love story that connects personal struggles to historic battles, while *The Haunted Man* recaptures the *Carol*'s supernatural theme with a ghostly bargain.

The Cricket on the Hearth generated diverse critical responses. One reviewer wrote that "there is not much ingenuity, and no nature in the plot. . . . Its merit lies in its sentiment which is yet extremely liable to the charge of being mawkish and maudlin" (Collins 181), while a different critic encouraged the author and claimed that "We are happy to find that Mr Dickens . . . has left the question of social wrongs and rights to the discussion of those who can consider them in a calmer and less partial spirit, and turned his attention to a subject of purely moral interest" (Collins 179). However, I find this statement inaccurate as the subject matter of *The Cricket* goes beyond "moral interest": its questions and conclusions about women's roles inside and outside the home unmistakably join a larger debate about female agency in the Victorian era, a question many authors of the period examined in their novels to express their opinion about "social wrongs and rights." *The Cricket* indeed lacks *Oliver Twist*'s dramatic and harrowing portrayal of Victorian workhouses and the mistreatment of orphans, or *Barnaby Rudge*'s heavily political inspection of the Gordon Riots of 1780. Still, the novella focuses on a social issue; it sets clear social boundaries for women by forbidding them to deviate from a patriarchal norm in a fairy tale framework.

As Jack Zipes claims about the Victorian period, "the fairy tale at mid-century was a manifesto for itself and a social manifesto at the same time" (xx). In this sense, David T. Mitchell and Sharon L. Snyder's notion of narrative prosthesis is applicable to Dickens's work. Mitchell and Snyder explore social issues through disability and contend that "disability has been used throughout history as a crutch upon which literary narratives lean for their representational power, disruptive potentiality, and analytical insight" (49). Therefore, Bertha's blindness becomes a textual crutch that supports the narrative's metaphorical use of visual impairment, her disabled body a "potent symbolic site of literary investment" (Mitchell and Snyder 49). The Christmas books weave "urgent social questions . . . into [stories of] conversion" (Douglas-Fairhurst xxii), and one of the main figures of

conversion in the story is Bertha. Although fairy tales often center around magical transformations, Bertha's change is rooted in reality: she has to leave behind the childish, imaginative fantasy world she lives in to face her position in Victorian society as a young woman, while simultaneously comprehending her limitations as a disabled person.

Blindness in Dickens's oeuvre is not a rare phenomenon. Besides Bertha, there are two other notable characters with visual impairment: Stagg in *Barnaby Rudge* and Wackford Squeers in *Nicholas Nickleby,* who "had but one eye, and the popular prejudice runs in favour of two" (Dickens, *Nickleby* 90). Esther Summerson in *Bleak House* also loses her sight, but her blindness is only a temporary consequence of smallpox. What could have been the primary inspiration behind *The Cricket*'s heroine then? The answer might lie in Dickens's *American Notes*, his travel journal that describes his journey to the United States between January and June 1842. During his trip, he visited the Perkins School for the Blind near Boston where he encountered Laura Bridgman, a pupil of the institute. "[A] girl, blind, deaf, and dumb; destitute of smell; and nearly so of taste," as described by Dickens, "a fair young creature with every human faculty, and hope, and power of goodness and affection, inclosed within her delicate frame, and but one outward sense—the sense of touch" (*Notes* 45–46). It is clear that Laura made a major impression on Dickens as he spent pages describing her life and even used her physician's written accounts to paint an accurate picture to his readers. His fascination mainly lay in Laura's education and her seemingly unearthly ability to learn hand signs and communicate through them. Nevertheless, this portrayal, however faithful, verges on the sentimental: "From the mournful ruin of such bereavement, there had slowly risen up this gentle, tender, guileless, grateful-hearted being" (46). The excessively negative metaphors used to reflect on Laura's disabled condition (as opposed to her heroism of overcoming such affliction) shows Dickens's inherent prejudice towards physical impairment and the Victorian tendency to associate bodily difference with misery, pain, or suffering. In the closing remarks of the section about Laura, Dickens addresses his readers, his presumably able-bodied audience: "Ye who have eyes and see not, and have ears and hear not; ye who are as the hypocrites of sad countenances, and disfigure your faces that ye may seem unto men to fast; learn healthy cheerfulness, and mild contentment, from the deaf, and dumb, and blind!" (58). Thus the account of meeting Laura becomes a lesson, her image an example and inspiration as Dickens "transforms the story of Bridgman's

education into a narrative of moral and spiritual rescue" (Gitter, *Bridgman* 75).

The Cricket was published three years after this visit, and it is highly probable that Dickens was inspired by Laura Bridgman when creating Bertha. For instance, Dickens's observation from *American Notes* that "[i]t is strange to watch the faces of the blind, and see how free they are from all concealment of what is passing in their thoughts" (*Notes* 45) is woven into the narrative of *The Cricket*, as Bertha, whose emotions are constantly betrayed by her facial expressions, exclaims to her friend, "Look into my face, Dear heart, Sweet heart! . . . Read it with your beautiful eyes, and tell me if the truth is written on it" (*Cricket* 208). Unlike Laura, Bertha *can* speak and hear, but similarly to Dickens's account of Bridgman, her blindness is used as a lesson not only for her but also for the people around her who lack perspective or misunderstand their own situations.

In traditional fairy tales, representations of disability are rarely nuanced. "Such direct insights into a [disabled] character's psychic or emotional response to disability are nevertheless rare," claims Ann Schmiesing, "however, the mere fact that fairy-tale characters are so shallowly described makes it all the more remarkable that their sole or primary distinguishing feature is often a disability" (14)—Victorian fairy tales, at the same time, tend to take a different approach to the portrayal of disability. When featuring a character with bodily differences, they often examine the person's inner conflict, as well as society's response to their physical Otherness.[2] As Kylee-Anne Hingston adds, "[s]everal Victorian authors used the literary fairy tale genre to negotiate the changing understanding of the disabled body and identity as well" (140).

Hingston's use of the term "literary fairy tale" is important here. Since "fairies and fairy tales occupied the Victorian imagination, with fairy images and motifs appearing in all forms of literature and culture, from soap advertisements to realist fiction" (Hingston 139), naturally, there was a great literary interest in the genre of the fairy tale, which was "simply part of the shared vocabulary of Victorian culture" (Newton xi). Jacob and Wilhelm Grimm's fairy tale collection, *Kinder- und Hausmärchen* (Children's and Household Tales), re-edited and republished multiple times between 1812 and 1857, was greatly influential during the period[3] and prompted many authors to write their own stories for children in the form of literary fairy tales, breaking with the oral folktale tradition of the Grimm collection. In many cases, these new stories relied on well-known fairy-tale tropes and clichés but were enhanced with subversive twists (see Nesbit or Craik),

which confirms Newton's claim that although "[f]airy tales may be regarded by some as the simplest of all narrative forms . . . they are in fact one of the most experimental of all nineteenth-century genres" (xviii). With so many authors writing modern fairy tales, there were many opinions as to how this genre could be reinvented. Newton calls Dickens "a defender of the fairy tale" alongside Samuel Taylor Coleridge, John Ruskin, Dinah Maria Craik, and George Macdonald, who "saw it as a form implicitly moral, but spoilt by overt moralization" (x) and went against overly moralizing rewritings of classic tales in his essay, "Frauds on the Fairies."

Fairy tales were clearly important for Dickens. According to Zipes, the author was "greatly influenced by his reading of fairy tales during his youth, especially *The Arabian Nights*, *The Tales of the Genii*, *Aesop's Fables*, and individual tales such as Little *Red Riding Hood* from the collections of Charles Perrault and the Brothers Grimm" (89). Laurence Talairach adds that Dickens "also admired Hans Christian Andersen, even inviting the Dane to stay with him, where Andersen proceeded to wear out his welcome" (25). Fairy-tale motifs and archetypes are recurring elements and figures in Dickens's oeuvre: in *David Copperfield*, Betsy Trotwood can easily be read as David's fairy godmother; *Great Expectations* begins with the age-old story of a poor boy being rewarded for his kindness by a stranger; and Fagin and Bill Sikes, the antagonists of *Oliver Twist*, prey on the titular orphan boy just like malicious storybook villains.

Such fairy-tale tropes and archetypes are frequent in Victorian fiction for adults and in texts written primarily for children. Zipes argues that the author of a literary fairy tale had dual audiences in mind: "young middle-class readers whose minds and morals they wanted to influence, and adult middle-class readers whose ideas they wanted to challenge and reform" (xi).[4] *The Cricket on the Hearth* uses no specific fairy tale as its inspiration; instead, it is a blend of various tales and fantastical elements lifted from diverse storybooks. Unlike Dickens's later short story aimed at children, "The Magic Fishbone", *The Cricket* was clearly intended for an older audience. In spite of this, it features a number of magical figures and enchanted settings, including the Cricket and the hearth themselves.

The novella begins in the home of John and Mary (Dot) Peerybingle, a working-class married couple. The narrative style evokes the tradition of oral folktales as the narrator constantly addresses the reader, involves them in the story by making personal remarks: "you must understand" the situation (165), a strange sight "would have amused you" (172), and "Bless you, you might have understood [a conundrum] like a

book—better than some books you and I could name, perhaps" (167). From the beginning, the reader's attention is directed to the hearth where the family can hear the Cricket's song. It embodies security, domestic bliss, and homely peace with its chirping. The Cricket itself is never described in detail, it is just as elusive as a fairy to which it is expressly compared by John and the narrator throughout the text. At one point the hearth is referred to as "the Altar of Home" (217), which connects the Cricket to the image of Hestia, the Greek goddess of the hearth and the home. Moreover, the Cricket's only physical appearance confirms its magical nature: "The Cricket on the Hearth came out into the room, and stood in Fairy shape before [John]" (216). Dot mentions that the Cricket is "sure to bring . . . good fortune. . . . It always has done so. To have a Cricket on the Hearth is the luckiest thing in all the world!" (172). As Dickens uses the word "chirp" instead of "chapter" to separate the different sections of his novella, one could say that the Cricket, resting on the hearth, functions as a constant observer and chronicler of everyday domestic life, a household fairy or a guardian angel. However, besides these otherworldly attributes, the Cricket's actions also subtly foreshadow what is to come in the story. Its comic dispute with the personified, boiling tea kettle exposes a discord at the hearth, and the possibility of a conflict that can happen even in the happiest families. As soon as the fire dies in the hearth, symbolizing the loss of marital trust, the Cricket's song is heard no more: "The Cricket, too, had stopped. Somehow, the room was not so cheerful as it had been. Nothing like it" (175). When these domestic troubles occur between Dot and John, Caleb and Bertha are likewise affected, which demonstrates the inherent connection between the two families.

As both the story and the characters center around the household fire, we can understand the hearth as a narrative framing device that captures the essence of the "Fairy Tale of Home." In the second chapter ("Chirp the Second"), however, Dickens turns to a more traditional fairy-tale beginning that evokes "once upon a time": "Caleb Plummer and his Blind Daughter lived all alone by themselves, as the Story Books say—and my blessing, with yours, to back it I hope, on the Story Books, for saying anything in this work-a-day world!" (188). In fairy tales, "these framing gestures . . . tell us that we are entering and leaving a narrative world where the supernatural is commonplace, where the rules of our ordinary world do not apply, where wishes can come true" (Wanning Harries 104). In the case of the Plummer family, this is especially true, as we are introduced to Caleb's fantasy world invented for his daughter, which negates their

desolate working-class surroundings and his own worn appearance and old age. As an effect of Caleb's "magic of deathless, devoted love," "his poor Blind Daughter [lived] somewhere else—in an enchanted home of Caleb's furnishing, where scarcity and shabbiness were not, and trouble never entered" (*Cricket* 188). Interestingly enough, it is their Cricket that seemingly suggests this idea to the poor man, planting the idea of deceit into his heart, which later causes great distress to him and his daughter: "listening sadly to its music . . . that Spirit had inspired him with the thought that even her great deprivation might be almost changed into a blessing, and the girl made happy by these little means" (189). In reality, their house is no more than "a little cracked nutshell of a wooden house" (188). Smallness here emphasizes working-class poverty. In fairy tales, small stature is likewise associated with adversity: living in a nutshell conjures up figures like Andersen's Thumbelina, a tiny girl always getting into trouble because of her size. In Dickens's other works as well, smallness is often connected to hardship or disability; as previously noted, *David Copperfield*'s Miss Mowcher and *The Old Curiosity Shop*'s Mr. Quilp have dwarfism, and the *Carol*'s Tiny Tim even shrinks in size because of malnourishment and his leaning on crutches. In *The Cricket*, Dot is portrayed as someone who uses prosthetic-like shoes because of her short height and small stature. In the opening scene of the first chapter, she is wearing "pattens" (wooden shoes), which can be seen as artificial body parts, adding to Dot's height: "Presently returning, less the pattens (and a good deal less, for they were tall and Mrs. Peerybingle was but short)" (156). Thus, smallness is displayed at the beginning of the story as a mild and not quite hindering form of bodily difference. Even the name "Dot" signifies smallness.

However, when introducing the novella's actual disabled character, the narrator does not reveal her name right away. Instead, he keeps referring to Bertha as the "Blind Daughter" which conjures up David Bolt's notion of nominal displacement, "the strategic setting aside of names in favor of labels" (36). In the case of disabled characters in Victorian fiction, "the name is repeatedly displaced in favor of the objectifying and infantilizing label" (Bolt 39). Furthermore, "the label *blind girl* consistently invokes a disempowered figure" (50). In fairy tales, losing one's sight is always a sign of defeat or the loss of power for female and male characters alike. In the Brother Grimms' later version of "Cinderella," the wicked stepsisters' eyes are plucked out by birds as a punishment; in "The Two Travelers" the evil shoemaker shares a similar fate for blinding a man out of jealousy; and in "Rapunzel" the prince blinds himself as a result of a suicide attempt.

Is Bertha also infantilized and disempowered? While living a lie, she is described as a "[h]appy Blind Girl . . . merry in her exultation" (*Cricket* 191). Caleb functions as an extension of Bertha's body for she addresses him as "my eyes, my patient, willing eyes" (195). Instead of experiencing the world by touch (as Laura Bridgman would do), Bertha places her trust in her father and depends on his help and perspective. Considering that Bertha cleans the house she inhabits, one questions why she never realizes their dire economic and social circumstances and exposes her father's lie. As Julia Miele Rodas claims, "Bertha would never feel the wetness or the cold draughts of their ill-repaired home, that she would not smell the mouldering of the beams and plaster . . . all these details and many others contribute to the sense that Bertha's blindness incapacitates her in a sense that goes beyond seeing or not seeing" (71). While Dickens emphasizes Bertha's ability to hear better than the other characters, he never mentions whether she has a heightened sense of smell or touch. Her blind trust in her father reads as naiveté, which marks the first instance of the novella using disability as a metaphorical device.

The tendency to read disabled beings as childlike is also apparent here, as even Bertha highlights how she is stuck in a childhood-like state because of her visual impairment: "you have had consideration for Blind Bertha, even when we two were children, or when Bertha was as much a child as ever blindness can be" (*Cricket* 208). Bertha's age is never revealed, which further complicates this issue. In *American Notes*, Dickens remarks that "a doll she [Laura] had dressed lay near upon the ground. I took it up, and saw that she had made a green fillet such as she wore herself, and fastened it about its mimic eyes" (46). Laura's projection of her own disabled identity onto the doll is evident from this passage. As a doll's dressmaker, Bertha is in a similar situation: being surrounded by toys for little girls, she has a chance to find solace in the presence of make-believe disabled figures, shaped by her to her own image. In the Plummer workshop, elegant and expensive lady dolls are made with "wax limbs of perfect symmetry," but cheap toys and "common-people" dolls have "just so many matches out of tinder-boxes, for their arms and legs . . . established in their sphere at once, beyond the possibility of getting out of it" (*Cricket* 190), which signifies the impossibility of disregarding one's own disabled body and inferior social position.

Jenny Wren of *Our Mutual Friend* reads like a variation of Bertha as she is also a doll's dressmaker. Jenny, whose "back's so bad, and legs are so queer" (222), reads like a variation of Bertha. She not only makes dresses

for the dolls, but also plays with them and assigns personalities to them. For Bertha, on the other hand, dolls only mean work: "she is a life-long producer rather than a consumer of playthings" (Kanwit 37). This signifies Bertha's distance from childhood, which highlights her ambiguous position: physically, she is able to move about, find her way around the house, and work for a living, but mentally she is like a child, stuck in an imaginary realm created by her father. On the cusp of adulthood, she wishes to take the next step and marry, without realizing that this could only be possible for her in Caleb's dream world, not in real life. "[B]lindness is central to *The Cricket on the Hearth*, both structurally and thematically, as it invites the imaginary reordering of the real world," states Heather Tilley (159). Nevertheless, this reordering is not possible. Before I examine why Bertha is not allowed to marry as a disabled woman, I shall take a look at her love interest, Tackleton, to analyze how the theme of blindness comes into play through his character and how this affects the narrative.

Similarly to his description of their living conditions, Caleb also paints a false image of Tackleton, their employer, to Bertha. He describes him as a kind benefactor who treats them with respect, but his real self is revealed to the readers through a fairy-tale lens: "he was a domestic Ogre, who had been living on children all his life, and was their implacable enemy" (*Cricket* 180). Bertha's affection for him springs from Caleb's fabrications, and she falls in love with a make-believe figure of the noble domestic hero. One could argue that this delusion does not only imply figurative blindness but also deprives Bertha of the use of her other senses: she is deaf to Tackleton's rude remarks about her, especially to "Poor Idiot" (193).

Besides his comparison of Tackleton to an ogre as a reference to his brutal nature, the narrator gives him a physical attribute as well that places him in a fairy-tale context once more: "Did I mention that he had always one eye wide open, and one eye nearly shut; and that the one eye nearly shut was always the expressive eye?" (181). Whether or not it is Dickens's intention to introduce the idea of the "evil eye," he uses Tackleton's half-closed eye as an expression of evil thoughts and intentions: "Tackleton stood looking on maliciously with the half-closed eye; which, whenever it met [Dot's]—or caught it, for it can hardly be said to have ever met another eye: rather being a kind of trap to snatch it up—augmented her confusion in a most remarkable degree" (207). This rather unique appearance fits within the portrayal of the Grimms' two monstrous sisters, One-Eye and Three-Eyes, who constantly torment their two-eyed sister. If we

acknowledge Tackleton as the villain of the story who envies Dot and John's harmonious marriage, it is not surprising that his main goal is to wreak havoc in the happy Peerybingle home, for which the arrival of Edward Plummer provides the perfect opportunity.

Upon coming home after spending many years in South America, Edward disguises himself to observe the woman he loves without being recognized, like the hero of the Brothers Grimm's "King Thrushbeard"; a trope used once again in the disguises of John Harmon/John Rokesmith/Julius Handford and Bella Wilfer in *Our Mutual Friend*. Edward's success in avoiding detection is twofold: firstly, his disguise as the "Stranger," a poor old man who was picked up from the street in John's cart, renders him socially invisible and unimportant, as even John forgets about him when he comes home. More importantly, he is described as "stone deaf" (185), which removes him further from the central stage. His pretense of deafness allows him to listen to the people around him in secret, and thus to receive the information he is looking for. He is in the shadows, yet his view is not dimmed: through his spectacles, with "dark, bright, penetrating eyes" (176), he easily observes everyone without being seen by them. Dot, a figure of unimpaired sight, is the only one able to identify the face of the long-lost friend and help him with his mission, but Tackleton soon discovers them. Detecting Dot's secret meetings with the stranger, he accuses her of infidelity to her husband, completely misreading the situation, blinded by his own prejudices and ill-will. Observing the world through lowered eyelids has its consequences in a narrative about blindness, and the possibilities and dangers of visual deception. As the narrator confirms, Tackleton's half-shut eye is more expressive than the fully open one, which may suggest that his blindness is actually a refusal to see and acknowledge other people. Without comprehending it, Tackleton now becomes the "Poor Idiot" who cannot see what is truly happening in front of his eyes. He, however, is not alone, as even the reader is kept in the dark about the stranger's identity and Dot's mysterious contact with him until the very end of the novella. Are we to believe Tackleton's conjectures? Can we trust our own eyes?

Father–daughter relationships like that of Caleb and Bertha populate Dickens's novels, both loving depictions, as in the case of Mr. Wickfield and Agnes in *David Copperfield,* and conflicting ones, as in that of Mr. Gradgrind and Louisa in *Hard Times* or Florence and Mr. Dombey in *Dombey and Son*. The majority of these works focus on the crisis of the father figure in opposition to the daughter. "Part of the problem in assessing

Dickens's female characters lies in deciding what genre of fiction structures them, that is, what kind of work Dickens is writing: popular melodrama, realist novel, moral fairy-tale, political satire or a mixture of modes," claims Alison Milbank (80), but no matter the genre or narrative, Dickens often "finds a variety of ways to test the daughter's true worth" (Schor 72). In *The Cricket*, Caleb and John's story are quite similar in this respect. Caleb has constant fears about how Bertha will react to his lie once it is revealed, while John, being forty years older than Dot (and constantly referred to as more of her father than her husband), is concerned about Dot leaving him for someone younger, blinded by Tackleton's views. His metaphorical blindness lies in his refusal to believe his eyes and accept that his wife adores him. The question of age-gaps in marriages is revisited by Dickens in his later works with couples like Doctor Strong and Annie in *David Copperfield*, and Joe and Biddy in *Great Expectations*. In addition, his novels often demonstrate there is an "eroticization of the father-daughter bond, wherein a daughter becomes a substitute wife to her widowed father rather than merely a housekeeper" (Nelson 115), which is especially true in Bertha's story. These incestuous undertones are also rooted in fairy tales that center around father–daughter relationships. In several renditions of the "Beauty and the Beast" story, the Beast is both the double of the heroine's father and the instance of prohibition. In Perrault's "Donkey Skin" and the Grimms' "All-Kinds-of-Fur", two different versions of the same tale, a princess must flee her kingdom because her father wants her as his bride. Dickens follows this tradition with the character of Tackleton, who intends to use his wealth to force May Fielding, a young woman without prospects, to marry him. However, the other two older male characters, Caleb and John, are not villainized. Leaving the shelter of the home and the warmth of the hearth in Dickens's work can lead to catastrophic consequences. When *David Copperfield*'s Little Em'ly runs away with the rakish Steerforth and ruins her reputation, her savior is her adoptive father, Daniel Peggotty.

In the same vein as "classic fairy tales reveal a situation—and therefore an identity—hitherto concealed" (Newton xxv), the last chapter of *The Cricket* includes revelations of all kinds: Edward removes his fantastic attire and is magically transformed from an old stranger into a handsome young man; John's eyes are opened to Dot's harmless secret and is reassured in her fidelity; and Caleb confesses his lies to Bertha. In order to fully understand Bertha's response, however, one needs to consider another

Dickensian father–daughter dynamic: one in which the daughter cares for the father.

Claudia Nelson's idea of the daughter being a "substitute wife" figure summons the image of the ideal Victorian wife taking care of her ailing husband, for many young girls in Dickens's novels act like this, or even like a mother, towards their aged parent: the "place of the daughter, particularly in a motherless household, can be managed to everyone's advantage by placing her in a maternal position" (Zwinger 425), consequently she "substitutes in the oedipal triangle for the mother; she provides the father the perfect love a mother might provide a son" (Sadoff 55). In *A Tale of Two Cities*, Lucie Manette symbolically and physically recalls her father to life as she nurses him back to health with her constant care and love. Little Nell Trent becomes her grandfather's guardian and guide as they navigate the English countryside in *The Old Curiosity Shop*. *The Cricket*'s Caleb, "an old man, worn with care and work, . . . a spare, dejected, thoughtful, grey-haired man" (229), appears to be an ideal candidate for the role of a father who needs to be cared for. When he articulates his fear about telling Bertha the truth, he admits, "I don't know what she'll think of me; I don't know that she'll ever *care* for her poor father afterwards" (227, emphasis added).

As suggested earlier, despite her limited agency, Bertha's disability ambiguously places her in a position that requires care and help, hence Caleb's misguided attempts to raise her in a pretend world. As Talia Schaffer argues, "in a good care dynamic, the roles of carer and cared-for constantly switch—but many care dynamics were not good in the nineteenth century, and they are not good now . . . disabled people may be constantly forced into the disempowering role of cared-for" (10). Taking an active step, Bertha aims to leave this childlike sphere behind. Her wish to assume the role of the carer is confirmed when she talks about the necessary and sweet duties a wife owes her husband: "To be his patient companion in infirmity and age; to be his gentle nurse in sickness, and his constant friend in suffering and sorrow; to know no weariness in working for his sake; to watch him, tend him, sit beside his bed and talk to him awake, and pray for him asleep; what privileges these would be!" (*Cricket* 197). When the truth is revealed to her, therefore, her main source of agony does not lie in learning about their poverty but in understanding that Tackleton is not a romantic option for her because of his true nature and higher social standing, and that she is denied the position of the caring wife.

Her confidence in herself, her father, and her future is completely lost, and the previously "happy Blind Girl" becomes "miserably blind" (228).

Dickens resolves her troubles quickly with a magical twist, by continuing the novella's fairy-tale narrative. Bertha "had been but a short time in this passion of regret when the Cricket on the Hearth, unheard by all but her, began to chirp" (228). Through the Cricket's fairy song, Bertha is reminded of the hearth of their home and the person she shares it with. Upon learning that Caleb is much older than he said he was (or at least more weary), she exclaims, "I am NOT blind, father, any longer!" (230), and "It is my sight restored. It is my sight! . . . I have been blind, and now my eyes are open. I never knew him! To think I might have died, and never truly seen the father who has been so loving to me!" (229).

Miracle cures for blindness are common in Victorian literature and fairy tales alike. Through divine intervention, Mr. Rochester in Charlotte Brontë's *Jane Eyre* is cured of his blindness after living an honest, Christian life, and in Gaskell's novel, *Mary Barton*, the doctors do "something to Margaret to give her back her sight" (474). The blind prince in "Rapunzel" is likewise cured by Rapunzel's healing tears. Amanda Leduc claims that "the prevalence of magic in fairy tales serves to reinforce the class and societal structures already in place, as well as traditional ideas of what it means to have a functional body in the world" (33). Refreshingly, Bertha's sight is not physically restored, which breaks an ableist pattern. Nevertheless, the new "sight" she gains does solidify the already established Victorian notions about gender and social roles, as well as bodily norms.

Metaphorically, Bertha is not blind anymore, because she is able to grasp the reality of her situation, her possibilities, and limitations as a disabled woman in Victorian society. With her new perspective, she understands that she can care for her father like she would for a husband (following the tradition of many other Dickensian father–daughter couples), but essentially, Dickens does not allow her to have a husband or family of her own, possibly due to prevailing medical theories on disability, contagion, and heredity of the period. To quote Stoddard Holmes, in the Victorian age "[d]isease and heredity each presented a theoretical challenge in which insufficient knowledge was filled in by fear, anxiety, or circular logic" (62), and in medical writing, blindness in particular "is habitually written about in the context of disease (rather than in the context of accident, aging, or a host of other possible causes)" (63), becoming "a figure for disease itself" (64). It is no surprise that both Rochester and Margaret are cured of their blindness, for otherwise they could not be part of a successful romantic

union. More often than not, "disabled characters are the worker bees of the marriage plot, labouring without reward, and in many cases able to perform this labour precisely because they are always already excluded from the possibility of reward," states Walker Gore (*Routledge Companion* 121). Bertha's dressmaking for dolls becomes more than work: it is also a state of mock motherhood, a possibly bitter reminder that she would never be able to bear her own children.

Is this a happy ending for Bertha? Even if she loves caring for her father, can we read this closure as "living happily ever after"? In the last scene of the novella, everyone joins in a happy gathering, dancing and celebrating the newlyweds, while Bertha remains in the background, providing music to the company on her harp. As Elisabeth G. Gitter points out, "In the final scene . . . Dickens shifts the burden of punishment almost entirely onto Blind Bertha: while she remains ineligible for marriage and outside of narrative closure, Tackleton, like the other foolish old men of the story, Caleb and John, is chastened, then forgiven" (*Blind Daughter*, 680). I agree with John Paul M. Kanwit, who links this ending to the story's opening: "Bertha's role at the end of the novel is thus similar to that of the Cricket itself; she provides background music and symbolic goodness, but little else" (42). After completing her narrative function, her presence is needed no more: like the Cricket, her song is heard but she is invisible. This overarching theme of *The Cricket on the Hearth* is summarized by Caleb's confession to Bertha: "The eyes you have trusted in have been false to you" (*Cricket* 228). As the story is an exploration of literal and figurative blindness within a fairy-tale framework, which offers different approaches to its central theme, this sentence can be interpreted in multiple ways in the greater context of the text: John's vision and understanding are obscured by Tackleton's influence; Tackleton is unable to see behind the surface; and Caleb deceives Bertha as her living eyes out of love. One could say that from a Victorian perspective, it is Bertha's blindness that narratively represents the "Fairy Tale of Home" in the most sufficient way: on the one hand, it is a nineteenth-century parable about how a daughter should be content with tranquil domestic life, and on the other, it functions as a cautionary tale for disabled women to know their social and physical boundaries.

These aspects connect *The Cricket* to Mitchell and Snyder's idea of the narrative prosthesis, since Bertha's blindness and body are used as channels through which social questions can be articulated. Yet, whether it is a conscious intention or not, the novella also gives a truthful, lifelike

portrayal of blindness that goes against the familiar and prevailing sentimental and symbolic uses of visual impairment. Dickens's narrative illustrates how Bertha's disability hinders her in Victorian society, even if it is concealed with metaphors. Schmiesing suggests that when researching fictional disability, one needs to move beyond the symbolized Othered body to find the individual disabled perspective: "[r]eading disability merely as a metaphor for something else is in itself a form of erasure, because it abstracts the disabled individual and her or his impaired body" (13). I believe the figure of Bertha Plummer provides a great opportunity to do just this.

University of Debrecen, Hungary

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György Kiss is a PhD student of the Doctoral School of Literary and Cultural Studies at the University of Debrecen in Hungary. He is mainly interested in disability, gender, and Victorian studies, currently exploring blind female characters and other disabled female identities in Victorian literature. His research is on such representations in the works of Elizabeth Gaskell, Charles Dickens, and Wilkie Collins. His other main research area is the history and genres of British and American children's and young adult novels.

Notes

1 A number of Victorian authors also feature these unusual characters as the heroes and heroines of their stories in various genres, giving them more prominent roles. Elizabeth Gaskell, for instance, connects disability with the Condition-of-England question: in her debut novel, *Mary Barton* (1848), seamstress Margaret Jennings loses her sight due to the high demand of work imposed upon her by the Industrial Revolution. Invalids like Charles Edmonstone and Margaret May in Charlotte Mary Yonge's bestsellers *The Heir of Redclyffe* (1853) and *The Daisy Chain* (1856) situate disability in the genre of the domestic novel. Wilkie Collins's *Hide and Seek* (1854) and Mary Elizabeth Braddon's *The Trail of the Serpent* (1860) use the transgressive sensation novel to give an account of the bodies of their disabled characters: the deaf Madonna and the mute detective, Joseph Peters, respectively. Dinah Maria Mulock Craik's works are also regularly researched for the constant use of disability in them: *Olive* (1850), for instance, is a Bildungsroman of a young woman born with a spinal deformity, while the weak and sickly narrator of *John Halifax, Gentleman* (1856), Phineas Fletcher, suffers from an undefined physical ailment and uses

crutches, and *The Little Lame Prince* (1875) recounts a fairy tale about Prince Dolor and his adventures with a prosthesis-like flying cloak.

2 Prince Dolor of *The Little Lame Prince*, for example, goes through several depressive episodes until he can accept his divergence from the physical norm. In E. Nesbit's story, "Melisande" (1901), the eponymous heroine is cursed to be bald and then goes through several extreme bodily changes in the style of Lewis Carroll's Alice, which render her life rather challenging.

3 The first English edition of the tales was published in 1823, translated by Edgar Taylor, with illustrations by George Cruikshank. As Jack Zipes notes, subsequent translations also appeared in 1839, 1846, 1849, and 1855 (xviii).

4 That is certainly true in the case of William Makepeace Thackeray's *The Rose and the Ring* (1854), a unique fairy story with a satiric edge only comprehensible by adults. *Poor Miss Finch* (1872) by Wilkie Collins and Charlotte Brontë's *Jane Eyre* (1847) both reimagine the tale of Villeneuve's "Beauty and the Beast" (1740), while Elizabeth Gaskell's *Wives and Daughters* (1864–66) places Perrault's "Cinderella; or, The Little Glass Slipper" (1697) in the context of the realist novel.

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REVIEWS

Beckett the Letterwright

James Little

Mihálycsa, Erika. *"A wretchedness to defend": Reading Beckett's Letters*. Debrecen: Debrecen University Press. Ebook. ISBN 978-963-615-047-1. Open Access.

Before reading Erika Mihálycsa's book on Beckett's letters, I thought I had read the Irish-French author's published correspondence. I now know that we are only beginning to read it. Published as an Open Access ebook, Mihálycsa's volume ranges chronologically over the four volumes of his letters published by Cambridge University Press between 2009 and 2016, tied together by recurring thematic groupings such as Beckett's self-translation, theater work, and personal life. According to its author, this book is an attempt to track "Beckett's many letterwright's voices" and "to mark the ways in which the letters recast our understanding of Beckett's texts and their place in the vaster, infinite conversation also called literature" (Introduction). She does so through close attention to the historical, political, and cultural contexts in which the bilingual writer worked. The cover of the book gives a flavor of this approach: a detail from Alberto Burri's *Sacco e bianco* (1953), constructed out of the sacks left by the US Army in postwar Paris, reminds the reader that there is much of value to be found in the detritus of the post-World War II Europe.

Mihálycsa uses the published letters to nuance commonplace ideas about the author and his working process, starting with his influences. So, we read of Beckett's impatience with Marcel Proust being "so absolutely the master of his form that he becomes its slave as often as not" (*LSB I*, 11; qtd. in chapter 1) or, later, the French author's "obsessive need" to reduce everything to "laws" (*LSB II*, 464; qtd in chapter 2). Instead, she makes the point that "there is no book that is discussed at more length than Thomas a Kempis's *Imitatio Christi*" (chapter 1). While many have focused on Proust's influence on Beckett's work, Mihálycsa's reading of the letters reinforce the point that the detrital archive pays to be re-read and may not, indeed, be the final point of exegesis. This is brought home when she points out that James Joyce is "present by his conspicuous absence" in the first volume of the letters (chapter 1). Even detritus, she shows, can have its underseen undersides.

As Mihálycsa herself acknowledges, Beckett's interest in painting and the performing arts is a topic that has been covered elsewhere, but here she does so afresh, providing new insights into the European artworks that he views during his trip to Germany (1936–37). Drawing on the extensive footnoting carried out by the editors of Beckett's letters, she tells us that "in Dresden he spots that the putto with armor at the feet of Giorgione's Venus had been painted over in the nineteenth century, before the X-ray photographs corroborate his verdict" (chapter 1; see *LSB I* 448–49 n4). It takes a writer as erudite as Mihálycsa to track Beckett through the literary, artistic, and musical terrain he traverses in the 1930s. For instance, she admires Beckett's "penetrating critical touch" in his assessment of the first recital of pianist Sviatoslav Richter in Paris: "Too interior was as near as I could get, though this sounds queer for Schubert, when the interior is as genuinely poetic as Richter's." Here, as at many other points of the book, Beckett's "critical touch" is matched by the author's own, as she informs us of Richter's role "in changing the perception of Schubert's repetitive, serial structures as music grappling with the inexpressible," a theme clearly relevant to Beckett's own work (chapter 3).

It is worth noting the sheer range of scholarly ability brought to bear on these readings of Beckett's letters. Alongside the English volumes of the letters, the French, German, and Italian translations are listed in the bibliography; of course, Beckett's own self-translation practice is so varied as to provide plenty of material for analysis. Having given numerous individual examples of his different translation practices, Mihálycsa is at pains to point out that Beckett's "attitude towards self-translation and his own bilingual corpus does not remain consistent" (chapter 3). Scholarship published since early versions of this book's chapters appeared as reviews of the individual volumes (mainly in *HJEAS*) supports this point. For instance, her position that the prose work *Company* (1980) was "written in English first and later translated into French" (chapter 4) is further nuanced by Georgina Nugent-Folan's detailed genetic analysis of the late prose work (*The Making of*), which shows that the bilingual genesis of this prose work was even more complex than a one-way move from English to French.

Are Beckett's letters literature? Mihálycsa shows us that they are, mainly by focusing on the insights they can give us into "the surprisingly consistent crystallizing process of Beckett's poetics" (chapter 1). But she goes further than this, suggesting that the letters can be read "as *avant-textes* to be read alongside the autograph work" (chapter 1). A key example are the letters Beckett wrote to art critic Georges Duthuit, beginning in the summer

of 1948, which, for Mihálycsa, "constitute the immediate *avant-texte* of the 'Three Dialogues' that Beckett starts writing in June [1949]" (chapter 2). This practice of the letters forming early examples of published work is perhaps clearest in Beckett's poetry, some of which was sent along with letters to his correspondents. When it comes to Beckett's theater, the letter as *avant-texte* has been examined in detail by Xander Ryan ("'To Talk Alone'"). Mihálycsa further makes a strong case that the letters are "an outlet for formulations not decanted into his fiction, yet somehow lingering on the threshold of the literary" (chapter 1). All in all, it is hard to argue with Mihálycsa's conclusion that "the author's place among literature's letterwrights is on a par with his status among the world's novelists and playwrights" (chapter 2).

Mihálycsa opens the book by providing a well-worn Beckettian reminder that is still well worth heeding: "The danger is in the neatness of identifications" (qtd. in Introduction). So, is there a risk that "the surprisingly consistent crystallizing process of Beckett's poetics" could be an example of coherence imposed in retrospect? Is there a risk of imposing a teleology when stating that "all Beckett's aesthetic and life choices from his *Normalien* year onward seem directed, with a consistent internal logic, towards his moving to Paris, joining the Resistance, and shifting to writing in French" (chapter 1)? Of course, it is very hard not to impose some kind of narrative arc on these shards of cultural detritus, impossible not to read some kind of pattern into "the mess" of Beckett's letters (the supposed randomness of which is what attracts many of us to the archive in the first place). Overall, Mihálycsa avoids the temptation to pigeonhole Beckett's letters, and the greatest value of her book is in bringing new light to letters we may have thought already read. As the author herself argues, "it is in the nature of archival findings to complicate the work of theorizing and of exegesis" (Conclusions). No book I have recently read reminds me of this with more eloquence than "*A wretchedness to defend.*"

University of Cyprus

James Little, Assistant Professor of Drama, Theatre, and Performance, Department of English Studies, University of Cyprus, is founding co-editor of the Bloomsbury Academic book series Global Perspectives in Irish Literary Studies, together with Christina Morin and Cóilín Parsons. His publications include *Samuel Beckett in Confinement: The Politics of Closed Space* (2020) and *The Making of Samuel Beckett's* Not I / Pas moi, That Time / Cette fois *and* Footfalls / Pas (2021).

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Morrison's *Beloved* as Physicality, History, and Tragedy

Zoltán Abádi-Nagy

Fadem, Maureen E. Ruprecht. *Objects and Intertexts in Toni Morrison's* Beloved: *The Case for Reparations.* New York: Routledge, 2021. xxx + 247 pages. Routledge Research in American Lit. and Culture. ISBN 978-1-003-10506-0. Ebk. $52.95.

Toni Morrison's primary thematic concerns are constant (revolving around historical injustice, Fadem would argue) although splendidly variable in plot-level manifestations. She is an author of incessant transformations as regards fictional techniques. We have a new Morrison in each of her novels as it were. The question is, as one is watching the wheels of the Morrison industry spinning, whether the numerous Morrison scholars are themselves blessed with the gift of enough critical invention and multifariousness to enable them to explore hers?

It seems that Maureen E. Ruprecht Fadem *is*. The way *Beloved*'s characters are surrounded with, and created by, objects certainly deserves the systematic analytical attention it has not yet received. Fadem's "object poetics" (xxvii) aiming at addressing the "intense physicality" of the novel, the thing-dominated "fragmentations of the narrative" (37), betokens the scholarly exploration of an aspect of *Beloved* so far unexplored methodically. Unexplored, that is, *this* systematically, in a fashion that is both penetrating and comprehensive, deploying its chosen method of investigation at the micro levels of the text while never losing sight of the macro thematic relevance and the extraordinary complexity of the novel at one and the same time.

Fadem's preoccupation with the physicality of the novel highlights new materialism ("objects have agency" [50]), one of the central theoretical sources in a monograph densely packed with theory—the latter being itself a praiseworthy feature of the book. Applied theories are either discussed directly, like tragedy as a genre, or defined indirectly through (Morrisonian) contextualization, for instance, through the employment of postcolonialism. It rarely happens that their meaning is taken for granted and therefore the theory in question is adopted a little lightly (as postmodernism is).

The monograph's premise is that, in the author's words: "In an architectural sense, *Beloved* is a complex of objects and object lessons, a history in things" (36). As for history, the overarching themes making this a "novel of history" are freedom and "the critical relation between freedom and race in U.S. cultural and political, economic, and social histories" (6),

with the collated thematics of desire and love (8). Thus, *Beloved* is "historical truth" (9), with Sethe being "a nation's ghost" (154). The premise of her story is substantiated with all-embracing knowledge, remarkable analytical skills, and thorough, convincing argumentation.

The third main thesis is that Morrison's novel—besides being a novel of things and history—is also "a literary tragedy," a "novel-tragedy" (9, 154). The sweeping intertextual study of the role of the novel's objects is Fadem's most original contribution. Sethe's story as history (culture, race, freedom) is somewhat more obvious for the intelligent reader, without scholarly assistance, but still a massive contribution as for critical angle, gap-filling detail, and profound insights (when related to earlier Morrison studies). Reference to earlier scholarship on Morrison's treatment of history in this broader sense (broader than discussing the Margaret Garner story) would have been welcome, though. At least scholarship which is more than a cursory glance at the problematic, like Jill Matus's "*Beloved*: the possessions of history" (sic) is in Matus's own *Toni Morrison* (Manchester UP, 1998) and Ashraf H. A. Rushdy's "Daughters Signifyin(g) History" available both in *Toni Morrison* (edited by Linden Peach, St. Martin's Press, 1998) and *Toni Morrison's Beloved: A Casebook* (edited by William L. Andrews and Nellie Y. McKay, Oxford UP, 1999). (Matus's and Rushdy's names are absent from Fadem.) But, as opposed to objects and history, the idea that the novel is also a tragedy strikes us first as self-evident. The proposition to submit to scholarly analysis what every reader has an unmistakable feeling of is provocative. Nevertheless, it does turn out to be rewarding to be immersed in Fadem's handling of the matter rather than flatly reject it as something promising us to reveal what every attentive reader realizes about *Beloved*.

The intertextual relations the author scrutinizes involve philosophy, literary theory (especially the theory of intertextuality and drama theory), and interpretive aspects of individual tragedies, ranging from Aeschylus through Shakespeare, Nietzsche, and Jaspers to Arthur Miller and on to contemporary film tragedies. The source of tragedy in *Beloved*, all in all, is pointed out to be: "the placement of a human subject in . . . the tragic paradox" (26).

Objects and Intertexts is a book of new critical accents concerning Morrison in general and *Beloved* in particular for all the reasons given and more. But it is also a talented and enlightening contribution when it comes to some traditional accents, adding to our general understanding of the novel considerably. A particularly appealing example to illustrate the latter is what can be seen as the justification for the assertion that the character

Beloved is as important as Sethe, Paul, and Denver. That she "contains slave history" (113), central to both Morrison's thesis and Fadem's argument, goes without saying. What Fadem's intertextual–intersectional critical approach yields, though, is refreshingly original: Beloved is "oracular"; she is a "figure in alignment with the Greek deities of revenge" (115), an Erinys—a postmodern one at that (118); a "Janus-faced Fury" (125).

Objects and Intertexts is rich in innovative explorations and new insights whilst making a far from innovative but most logical point (rarely foregrounded by other critics, if at all) to sum up *Beloved* for an amnesiac contemporary American culture. Morrison's novel, Fadem's Afterword concludes, is a cry for reparations: "to repair slavery's obliterations, the purloining of time and space and lives that should have been lived and should have been livable" (188).

If there is such a thing as interpretive fantasy (is there, really, or would it be another critical fallacy to assume that there is such a category?), Fadem is certainly gifted that way. Occasionally one wonders if she is or is not carried away by it a little, true. As in the case of the symbolism of the Bluestone Road windows, which are "Janus-faced" themselves, both "hopeful" and "threatening." They are

> signifying both the possibility of being brought into some kind of human divinity, or some pleasure and solace, some simple reverie, and at the same time those glass panes partitioning home and world scream like prophetic hawks with the potential to break and act like some elevated and overwhelming force—the weather, God, ghosts, white people—to (symbolically) shatter and produce a violent rain of glass shards. (40)

But perhaps one needs to be endowed with such a creative interpretive faculty in order to be able to discuss the thick description of social and human tragedy that *Beloved* holds; to be worthy of interpreting the art of Toni Morrison. Fadem does display just that special ability and expertise.

She does a very thorough job of what she undertakes to do. She checks out every nook and corner of the novel and follows every line of investigation through to the minutest detail, with the enthusiasm of a competent scholar who is fully equipped with all the critical and theoretical skills to be brought to the task. And, paradoxically, this is why her learned and witty discourse tends to be overwhelming, too crammed with examples, data, justifying details, and relevant theoretical embedding. Somewhat like a perfect inventory of the examined phenomena and the possible approaches

to each and every item. It is the nearly exhaustive nature of the methodology that creates this impression; that is, the reader feels buried under the flood of details and the weight of intensive argumentation at times.

However, *Objects and Intertexts* is too good and too important to lodge complaint against. Besides, there is a helpful person and subject index attached to it, with the detailed subject words of "intertextuality," "object theory," "things," and "tragedy." "History" could have joined them as another central notion organizing the book; one whose dimension is expanded far beyond the Margaret Garner story.

But do not despair. The monograph is utterly worthy of the reader's effort as it is.

University of Debrecen, Hungary

Zoltán Abádi-Nagy, Professor Emeritus, University of Debrecen, published on eighteenth-century British satire, black humor fiction, entropic fiction, postmodernism, minimalism, theories of the comic, cultural and cognitive narratology, founding editor of *HJEAS*, former chair of the Hungarian Society for the Study of English (HUSSE), copresident of the Hungarian Association for American Studies (HAAS), founding editor of the monograph series *Orbis Litterarum*, translator of American novels, drama, short stories (Barth, Barthelme, Percy, and more), published interviews with Doctorow, Gaddis, Percy, Vonnegut, and others.

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A New Monograph on Brian Friel, Inspiring Giant of Irish Theatre

Mária Kurdi

Russell, Richard Rankin. *Modernity, Community, and Place in Brian Friel's Drama.* Second revised and expanded edition. Syracuse: Syracuse UP, 2022. 456 pages. ISBN 132-44-5290. $29.95.

The book under scrutiny here is a massively revised and expanded second edition of the monograph *Modernity, Community, and Place in Brian Friel's Drama* (2014) by Richard Rankin Russell, under the same title. As he explains, he added "a series of new interchapters that augment and supplement the original study" (4). Among them of particular interest is the one about Friel's shift to writing plays, in which the author claims that "[a] real reason Friel moved into drama exclusively is that he found it more amenable to experimentation" and this ritual-based genre is most appropriate to communicate the "ideal of community" (82, 85). Moreover, Russell also added a closing chapter with the joint analyses of three pieces from Friel's later work, raising the number of plays which receive in-depth critical treatment in the book to eight. In chronological order, they are *Philadelphia, Here I Come!* (1964), *The Freedom of the City* (1973), *Faith Healer* (1979), *Translations* (1980), *Dancing at Lughnasa* (1990), *Molly Sweeney* (1994), *The Home Place* (2005), and *Hedda Gabler (after Ibsen)* (2008); all qualifying as major works in the Friel canon. The research the author has accomplished for writing this monograph is awe-inspiring; any chapter convinces the reader that the scope of literary, philosophical, and cultural studies references used by Russell in his analyses is enormous and far-reaching.

The keywords announced in the title—"modernity," "community," and "place"—remain guiding concepts for the close reading of the selected plays. Although critical literature on Friel is embarrassingly abundant, about each of the eight plays Russell offers original insights concerning the representation of communities and the political or politically imbued economic powers under the guise of modernity, which might threaten or even destroy the former. Modernity and community prove to be inextricably intertwined in Friel, yet this does not mean, Russell contends, that Friel's interest in rural culture would be nostalgic, and provides examples also of the playwright's critique of that culture. Russell understands community as created by the playwright on the page as well as its re-creation through performance, happening "onstage and between actors and audiences" (17)—or in the imagination of the reader in case the staging takes place in the mind. His close readings underscore that the relations between community and modernity in

Friel are often manifest in a devastating clash leading to alienation but may also result in personal growth and a heightened form of spiritual experience. As the discussions reveal, these extremes and their variants are often set against each other in or across the plays, pinpointing their potentially contradictory effects on the human soul and its needs. For Russell, Gar in *Philadelphia* is a "particularly dislocated" man (51), who severs himself from the frustrating milieu of Ballybeg where communal life is already infected by the lure of modernity, trying to find a new identity in popular culture induced visions of a glamorous future in America only to be discouraged by the reality of his emigrant aunt's stiflingly protective welcome. Russell has a keen eye for the sophisticated juxtaposition of details in Friel's portrayal of the onslaught of modernity erasing certain communal values, for instance, he observes that the talk about the possible crash of the plane Gar will board is followed by Gar's desperate attempts to recall a happy fishing trip with his father long ago, while the latter strives to remember another happy scene with his son (69–70).

Turning to *Freedom*, Russell takes the approach that the community formed of three very different people in Derry Guildhall, although fated, could model a communal potential and understanding between diverse sides in Northern Ireland as its basis is shared humanity. Also, he refers to Jacques Derrida's theory of hauntology, which, he says, "enables us to acquire an epistemology of the dead" (128) and, reincarnating them from memory, "we have a communion with the dead, and we are given a responsibility to remember them into the future" (138). What crushes the mini-community in the Guildhall, Russell suggests, is not only the military or judicial weapons of the British authorities, but also the "negative form of modernity and tradition" represented by the Catholic Church and the nationalist balladeer's distortions (100), which operate indirectly, one should not forget. Similarly, the community in *Translations* faces crisis not only due to the intervention of external forces but also to internal divisions as most of Ballybeg would hardly accept the possible inclusion of Yolland, let alone value his open, hybrid position as enriching for their rural society. Eventually, it is the old schoolmaster Hugh, Russell maintains, "who resolves that Irish culture must accommodate itself to certain aspects of modernity—particularly the speaking of English—to survive" (205).

In *Faith Healer*, Russell claims, the "themes of exile, homecoming and community are all intertwined" (142) more than in other works by Friel. Here the threesome of the protagonists traveling together become a spiritual community due to Frank Hardy's renewed healing talent during their last night in a Ballybeg pub, as Russell illustrates it by references to meaningful gestures

and looks. Similarly to *Dancing at Lughnasa*, *Faith Healer* is a drama which testifies to ritual being an atavistic source of theater and theatricality, a belief Friel shared as it is known from his essays. The final sentences in Frank's closing monologue, Russell observes, depict him walking towards his certain death in a way that emphasizes the ritual nature of the scene foreboding his sacrifice at the hands of the farmers whom he sees as abstract figures. Nevertheless, Frank feels a kind of homecoming "precisely because he is experiencing *communitas*" (157) with the four men who are taking care of a fifth one in a wheelchair. True, the text signifies the need of victim and killers for each other, yet viewing it as a spiritual community of disparate characters which might carry hope "even for Northern Irish society" (173) sounds dubious and farfetched. The ending focuses on Frank's achieving inner peace while facing imminent death, and the text itself resists the forcing of political connotations on it. Not so with *Dancing at Lughnasa*, "the most emplaced of all Friel's dramas," (252) according to Russell, which, quite clearly, is grounded in the cultural and socio-political ambience of the 1930s, depicting "a society in transition" (251) towards modernization. At that time, pagan rituals were marginalized, even vilified, by the Catholic Church, a divisive power and morally rigorous ally of the new post-independence Irish state. Russell convincingly suggests that the five Mundy sisters' wild but separate movements in the central dance scene to the traditional tunes played by the new technological invention, the radio, prefigures the disruption of their female community in the process of modernization.

The guiding viewpoint of place proves less productive than those of community and modernity. Notably, Russell's statement in the "Introduction" that "the subject of place in drama, especially in non-American drama, is severely undertheorized" (2), does not acknowledge the existence of the book *Mapping Irish Theatre: Theories of Space and Place* (Cambridge UP, 2013) by Chris Morash and Shaun Richards, who make a precise distinction between place and space. Instead, Russell quotes the phenomenologist Edward S. Casey, for whom place is "a dynamic, ongoing event" (11), but the ways in which this idea and the awareness of Friel's stress on "flux" as the only demonstrable constant of life (15) have influenced this inquiry into the playwright's dramaturgy, do not always seem clear. The final chapter, "Home and Beyond: *Molly Sweeney*, *The Home Place*, and *Hedda Gabler (after Ibsen)*" makes up for this to an extent by a consistent examination of "home" in these late plays, introduced by the claim that "eviction and exile drive Friel's drama, but he instantiates temporary sites of sacredness over against that trajectory" (299), which chimes with the general human experience in our time. In *Molly Sweeney*,

after the trauma of losing her sight again and having to cope with isolation in hospital, Molly finds a new home in language and "a fantastic world," a "theater of the mind," populated with "imagined characters," Russell concludes (304–05, 311). The protagonist of *The Home Place*, Christopher Gore's painful experience is that his Anglo-Irish liminal, "stateless condition" (318) cannot be sustained in an Ireland of colonial divisions, even though he hopes to rise above those. In the last piece of the Frielian canon, the adaptation of *Hedda Gabler*, Hedda's modernist individualism drives her towards spiritual placelessness, which Russell sees as paralleling Columba's "similarly excessive and bellicose individualism in *The Enemy Within*" (329–30), Friel's first self-acknowledged play, giving a frame to the oeuvre.

All in all, this monograph is unique in analyzing Friel's drama around the joint themes of modernity, community, place, and their ramifications to pursue their nationally inflected interconnections across a selected group of masterpieces. In addition, several formal and stylistic aspects of the plays including the dramaturgical use of music, the body, language, memory, and issues of audience response are also discussed, supported by or arguing with various critical or theoretical views and assumptions. At points Russell provokes his readers to follow an unorthodox line of thought and thereby reconsider established meanings; we may not always agree with his conclusions, yet it is undeniable that the monograph alerts us to crucial if not easily communicable concerns the playwright transmits through his life work. The book also serves as evidence that Friel's work does not cease to have the potential of inspiring thoughtful and inquisitive dialogues with and about it. As it boldly takes novel paths, *Modernity, Community, and Place in Brian Friel's Drama* is unquestionably a must for dedicated scholars and students of Irish and world theater in general, and Friel's drama in particular.

University of Pécs, Hungary

Mária Kurdi, Professor Emerita, Institute of English Studies, University of Pécs, Hungary, has widely published on modern drama and Irish theater in particular. Her latest book is an edited collection *Negotiating Age: Aging and Ageism in Contemporary Literature and Theatre,* which came out in the *HJEAS* Books series in 2023.

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Narrative Theory Across Cultural Landscapes

Gabriella Vöő

Horváth, Kornélia, Judit Mudriczki, and Sarolta Osztroluczky, eds. *Diversity in Narration and Writing: The Novel*. Newcastle upon Tyne: Cambridge Scholars Publishing, 2022. 299 pages. HB. ISBN 978-1-5275-7716-9. £63.99.

The essays collected in this edited volume explore multiple theoretical dimensions of narrative, ranging from the interplay of forms and modes in verbal and visual narrative structures and techniques to cultural and political critique performed by narrative fiction in multiple historical contexts. The authors, an international contingent of literary scholars, incorporate interdisciplinary theoretical frameworks in their discussions of films and other forms of visual art, classics of world literature, the modern and contemporary literary canon in English, as well as Hungarian and other East European works of fiction. Many of the latter have lately become, in English translation, integral parts of the international canon. As a result of the comparative heuristics of these critical approaches, literary narratives engage in a productive colloquy across geographical and cultural boundaries.

The five contributions making up the first section, "Intermediality and Narrative Theory," shape the intellectual framework of the volume by interrogating established concepts of narrative theory such as perspective and focalization, narrative speed and rhythm, adaptation and translation. Mieke Bal's essay "From 'Madame Bovary c'est moi' to 'Emma is Us': Focalisation as Political Tool" demonstrates the broad implications of narrative perspective in art, culture, and cultural politics. Bal, the author of seminal studies in the field of narratology, argues here that the ambiguous focalization has the potential to manipulate, persuade, and indirectly bring forward a critique of cultural politics. Her case becomes even more convincing as the exploration of narrative perspective is extended to visual adaptations of Flaubert's novel. *Madame B*, the film and video installation that Mieke Bal co-directed with the British artist Michelle Williams Gamaker between 2011 and 2014, is an experiment in responding to the novel and re-imagining its themes in a way that these acquire contemporary relevance. The intermedial dialogue between novel and film transforms Flaubert's critical commentary on the social perception of women, an element of the cultural politics of his own time, into a compelling critique of our modern experience. The condition we share with Flaubert and his

contemporary readers, coined by Bal as "emotional capitalism," raises difficult psychological and moral questions about systemic, collective, and individual responsibility in creating endless loops of desire, fulfillment, and suffering.

Intermediality, focalization, and narrative structures continue to be relevant in the subsequent contributions to this section. Tibor Gintli's "Narrative and Speed" engages critically with Gérard Genette's landmark work on narrative theory as well as Mieke Bal and Wolf Schmid's engagements with the narrative mediation of speed and rhythm. The methodology proposed by Gintli favors qualitative aspects of the narrative over comparing diegetic time of the plot with text quantity. The reader's subjective experience of speed and rhythm as well as the internal dynamics and poetic structures applied in the narrative are at least as important, if not more so, as the ratio between diegetic time and the corresponding text length. Kornélia Horváth explores the philosophical dimensions of the novel in her analysis of theoretical works by three Central European authors: Milan Kundera, Béla Hamvas, and Géza Ottlik. These writers, whose careers collectively spanned most of the twentieth century, conceptualize the novel as a complex narrative form that centers on human existence and identity in order to grasp the essence of being and historical consciousness. Horváth's discussion reveals common threads of thought running through Kundera, Hamvas, and Ottlik's definition of the novel's fundamental role, which is to explore the ambiguity of all things human, to claim a personal fate, and to model the indeterminate quality of a reality in the process of becoming.

The two essays concluding this section guide the reader into the inner worlds of fictional characters as the authors address some of the difficulties of rendering thought processes by narrative means. András Kappanyos evaluates two classic Hungarian translations of James Joyce's *Ulysses* as well as the recent retranslation of Joyce's monumental work by a team of scholars (Marianna Gula, András Kappanyos, Gábor Zoltán Kiss, Dávid Szolláth). "Heteroglossia and Inner Monologue: Linguistic Events as Character Traits in *Ulysses*" offers fascinating insights into the challenges of translating the novel's idiosyncratic voices and inner monologues. Rendering the intricacies of this polyphonic text in another—in the case of Hungarian, a non-Indo-European—language inevitably oscillates between masterstrokes, epic failures, and creative reinterpretations. János Szávai's "Dream Narratives throughout the Centuries" traverses literary history, examining how dreams were used by authors from ancient times to

modernity to reveal deeper psychological and existential truths. This exploration of the experimental fiction of classic writers such as Dostoevsky and Thomas Mann as well as that of contemporary Booker Prize winning author László Krasznahorkai reflects on the changing roles of dreams in narrative structures, from divine messages in ancient texts to tools for character development and thematic explorations in contemporary literature.

The essays in the section "Classic and Contemporary English Fiction" demonstrate that methodologies focusing on the narrative structure of fictional works often reveal how deeply these works engage with broader cultural and psychological issues. Contributions to this section are arranged in a historical sequence for ease of reference. However, transcending this chronological framework reveals common salient themes and critical methodologies. The essays discussing Lewis Carroll's Alice novels, Emma Donoghue's *Room*, Doris Lessing's *The Grass Is Singing*, and J. M. Coetzee's *Dusklands*, by Antal Bókay, Noémi Albert, Nóra Séllei, and Angelika Reichmann, respectively, address indirect expressions of personal or collective trauma emerging from painful experiences, abusive spaces, or sweeping historical events. Bókay's "Diverted from Wonderland: Multilevel Trauma Narratives of Lewis Carroll," based on the definitions of trauma by Sigmund Freud and Sándor Ferenczi, suggests that traumas experienced in early childhood may find an outlet in the creative output of the traumatizing adult. Thus, Carroll's language play and quirky nonsense are open to interpretation as entry ways into a secret life sublimated into the ambiguous modalities of the "Alice world." A related theme, early childhood trauma is approached from a different critical perspective and methodology in Albert's discussion of narrative voice and focalization in Emma Donaghue's novel *Room* (2010). She concentrates on the filters through which Jack, an abducted five-year-old boy perceives and makes sense of the world: stories told by his mother and images from a flickering TV screen. These fictional worlds provide the child, the novel's narrator-focalizer, with the ingredients for creating a liminal reality in which the line between the fictional and the real are blurred.

Narrative structures can also be leveraged to address trauma and abusive environments, collective or individual. Nóra Séllei's analysis of Doris Lessing's *The Grass Is Singing* shifts the focus from established criticism's thematic explorations of race relations and gender issues in Lessing's début novel to narrative voice and perspective. Séllei discusses Lessing's versatile use of the third-person omniscient narrator to reveal the

characters' thoughts and feelings and explores the relevance of narrative counterpoints—the juxtaposition of the perspectives of white settlers with those of black field laborers and house servants—in revealing the dark intricacies of colonial life. Angelika Reichmann's "Narration, Colonisation, Intertextuality: J. M. Coetzee's *Dusklands*" addresses complex themes of colonization, personal identity, and the representation of trauma. The essay highlights the intertextual and metafictional character of the novel's embedded narrative, the "Vietnam Project." This propaganda work by an army psychologist is an attempt to capture and contain the traumatic experience of the war by forcing reality into existing European mythical and literary paradigms. Reichmann argues that Coetzee's metafictional strategies create a maze of intertexts that, ironically, conceal social and psychological realities instead of revealing them, shifting the responsibility to the perceptive reader. Thus, both Séllei and Reichmann explore the psychological underside of colonialism. Other innovative approaches of narrative structure are generated by revisiting semantic and structural aspects of narratives. Gábor Kovács examines narrative parallelism and counterparts, techniques that add layers of meaning to Jack London's "The Law of Life" and "Morganson's Finish" also amplifying the impact of the conventional plot. Approaching narrative structures from a different angle, Yuliia Terentieva's interpretation of a selection of novels by David Lodge reveals that the campus, the obvious narrative environment of the academic novel, can be regarded simultaneously as heterotopia and as a non-place, pointing out the dual nature of the campus as a stage for satirical dramas and a space for short-lived, superficial interactions.

The final module of the volume, "Narrative Discourses and the Hungarian Legacy of Fiction," introduces further comparative elements to the conversation about twentieth-century narrative traditions and emerging contemporary trends. While the essays included in this section focus on specific Hungarian works of fiction, their explorations of literary modes, tropes, and techniques such as irony, metaphor, ellipsis, and narrative disruption, as well as themes like trauma, memory, and identity, demonstrate the common, transnational nature of processing personal and collective experience through literary narratives. Two insightful studies engage with the international theme in novels by high and late modernist writers. Mihály Benda's "Perception and Representation of Paris in Modern Hungarian Fiction by Gyula Illyés, András Hevesi, and Jolán Földes" reveals structural similarities in the deployment of the flaneur's perspective by the three prominent authors. Benda suggests that these novels published during the

1930s and 1940s feature the French metropolis as a dynamic space that shapes the characters' perception and existential perspective, and, in turn, the character of the city is shaped by them. In "Wonders of Telling—Telling Wonders: Sándor Márai's *The Blood of San Gennaro,*" Zoltán Kulcsár-Szabó explores themes of totalitarianism, emigration, and the search for a transcendental experience in a novel by an author who drew upon his own and his contemporaries' experiences under an oppressive regime. Reflecting on the existential and political dilemmas faced by artists and intellectuals after World War II, Márai, who chose exile from Hungary after 1948 to avoid involuntary collaboration with the totalitarian regime, uses the metaphor of a miracle to contemplate the unpredictable events of revolution and redemption.

Memory, perception, and the artificiality of social life are central concerns for László Bengi, Sarolta Osztroluczky, and Edit Zsadányi, critics whose theoretical explorations of descriptive techniques, narrative structures, perspective, and voice have led to broader insights into the social and psychological dimensions of identity. Bengi's essay on the high modernist writer Dezső Kosztolányi's *Skylark* (1924) dissects the subtle narrative strategies that bring to life an absent character. Ambiguous descriptions of the eponymous heroine reveal the fragmented personality of an unattractive daughter, and the dissonant position she occupies in the life of her elderly parents. Osztroluczky's comparative analysis of late modernist autobiographical short stories reveals the intricacies of memory and introspection conveyed through expansive retrospections in two late modernist short stories. Analyzing instances of homecoming in Wolfe's "The Lost Boy" and Ottlik's "Nothing Lost," Osztroluczky compares instances of narrative mediation that convey shifts in personal identity, the sense of loss, and the passage of time. Edit Zsadányi's essay "Hungarian Voices of the Subaltern in the Interruption of Contemporary Narrative Discourses by Krisztina Tóth, Kriszta Bódis, and Agáta Gordon" further explores how socially marginalized groups articulate their experiences. The analysis references Gayatri Chakravorty Spivak's landmark work "Can the Subaltern Speak?" to explain that by disrupting traditional narrative structures, contemporary authors enable marginalized perspectives to come to the fore.

Themes of absence and silence emerge from literary works by authors grappling with existential questions raised by unspeakable trauma and marginalization. Three comparative essays address the representation of extreme suffering in literary, theoretical, and philosophical contexts.

Dorottya Szávai's "Figures of Absence and the Poetics of Silence in the Works of Kertész, Kafka, and Camus" examines nuances of literary expression in a wide range of works by the Holocaust survivor and Nobel Prize winning Hungarian author. She points out that the vision of Kertész is akin to the negative theology of Jewish and Christian mystics in his conceptualization of a God withdrawn from creation. This insightful essay establishes a dense web of connections, intellectual and technical, between writers experimenting with literary expressions of the ineffable. A similar approach is undertaken by Sára Tóth in her close examination of one particular work by the prominent Hungarian author. "The God of Auschwitz: A Reading of Imre Kertész's *Kaddish for an Unborn Child* Inspired by Northrop Frye's Vision of Literature" interprets the 1990 novel within the critical framework of the Canadian critic's works on Blake, the Bible, and romance. Tóth's eye-opening analysis of apocalyptic and demonic symbolism along with the narrative patterns of fall and redemption in *Kaddish* enhances our understanding of how Kertész conceives existentialist and theological alienation and internal exile in the post-Holocaust world.

The essays in this volume elaborate on various innovative approaches to storytelling by modern and contemporary authors from Western Europe, North America, and Central Europe, with a particular focus on Hungarian writers. These comparative analyses highlight the transnational flow of narrative themes, techniques, as well as psychological and philosophical concerns. Despite the unique ways writers have addressed historical upheavals, traumas, and other existential challenges of the twentieth and twenty-first centuries, common threads are revealed in the most experimental narratives. The editors' careful selection and organization of these contributions illuminate the connections and conversations between literary works by authors who never met but engaged in meaningful dialogues through their shared experiences and observations of global events. This collection broadens the perspective of literary critics and opens up new possibilities for understanding the power of narrative fiction.

University of Pécs, Hungary

Gabriella Vöő, Associate Professor of American Studies at the University of Pécs, Hungary, does research in nineteenth- and twentieth-century American literature, Reception Studies, and ecocriticism. She is the author of two books and several scholarly articles in these areas.