JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

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Washington, DC

MOSF *Journal of Science Fiction*
Volume 5, Number 1
May 2021
ISSN 2474-0837

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Volume 5, Issue 1, May 2021
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JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

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Letter from the Editor

The past year has presented unprecedented challenges for people across the world. From the public health and governance issues raised by COVID to the social and racial issues that have reached a fever pitch—particularly in America—unrest and discomfort have become the "new normal" for far too many. As we face loosening COVID restrictions in advance of summer, many are anxiously anticipating a return to old habits (both good and bad). While a return to the crucial social interactions that define the human experience may be a welcome reprieve, for instance, such a long period inside has also inspired many towards the pursuit of much less sustainable goals.

This issue of the MOSF *Journal of Science Fiction* explores a variety of topics, but begins and ends on notes of environmental reflection. In part continuing the discussion from our first issue of last year, the Environmental Science Fiction special issue (V4N1), the articles in this issue look both to our world and others—those worlds created by SF authors—that may shed light on our habits and the problems we have yet to face. Beginning with a reflection on the science fiction disaster films' effect on real attitudes towards climate change, Isabella Hermann explores varying tropes within dystopic environmental SF and debates their varying educational and entertainment values.

The issue then moves toward the issues of gender and sexuality as Race MoChridhe explores lesbian resistance and anti-feminism in Annalinde Matichei's *Flight of the Silver Vixen* and Kristine Larsen offers an analysis of the problematic representation of female scientists in the filmic adaptations of Michael Crichton's work.

Transitioning to the realm of metaphysics and metanarrative, Eduardo Santiago Ruiz charts the evolution of insignificance and cosmic solitude in the scientific and science fictional imaginaries, and Juliette Bessette explores the Independent Group's extratextual production of science fiction art and artifacts.

Lastly, the issue returns to questions of land, belonging, dispossession, and environmentalism as Sandra Cox explores representations and readings of indigeneity in the works of Rebecca Roanhorse and Cherie Dimaline. The issue concludes with Hans-Georg Erney's reading of Liu Cixin's *The Three-Body Problem* and its implications as a reflection of Chinese environmental concerns.

Together, these articles underscore the important work that science fiction has done thus far to construct our social and sometimes political attitudes towards the future. Even more crucially at our current moment, they reflect on what science fiction still has to offer—reflections on the things that make us different, the fundamental ways in which we are all one species, and the questions and crises will we face whether united or divided.

- Aisha Matthews
Managing Editor,
MOSF Journal of Science Fiction

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Reflections

Climate change and science fiction: What we can (not) learn from disaster films

Isabella Hermann, Berlin-Brandenburg Academy of Sciences

As bad as the current COVID pandemic is for us humans, for a short time, it seemed to be a blessing for the climate, the air, and the environment; the economy lay idle, air traffic came to a standstill, carbon dioxide emission decreased worldwide, and smog disappeared from cities (e.g., Carbon Brief 2020). Yet this was only a snapshot. Climate activists' possible hopes that our consumer behaviour or the structure of the global economic system would transform in the long term seem to be wishful thinking.

So how can we manage to mitigate or live with human-made global warming in a post-COVID era? In our current geological epoch of the Anthropocene—the increasing human influence on the Earth system, including the negative consequences such as climate change, species extinction, and overexploitation of resources (Crutzen 2002)—scientists and activists are increasingly turning to science-fiction where doomsday scenarios are teeming. The idea is to use the "genre of the future" to find possible answers to the future challenges of climate change and ecocide, i.e., to educate the people and, in addition, to bring about a positive change in behaviour. Particularly, science-fiction films should therefore not only entertain but also encourage more sustainable conduct. But can a pop-cultural/artistic genre really perform the balancing act between these two goals?

Let us take a look at the different scenarios that the genre offers. We can roughly distinguish between two distinct science fiction narratives when it comes to dealing with the aftermath of the Anthropocene. In one narrative, humanity needs to cope with the consequences of self-inflicted global warming and environmental catastrophes on Earth. More recently, a new term has been established for books, films, and comics on this topic: climate fiction or cli-fi for short. Popular themes include post-apocalyptic visions of the future in which people have to fight for survival. In *Waterworld* (1995), for example, the polar caps have melted and—about 450 years into the future—flooded large parts of the Earth. In *Mad Max: Fury Road* (2015), the world has become a dry wasteland around the year 2045 after nuclear, oil, and water wars. And in *Snowpiercer* (2003)—set in 2031 (playing only 11 years in the future)—efforts to stem climate change through geoengineering (see Maynard 2018) have led to a new ice age and the extinction of all but a few people trapped in a train. Common to all these dystopian ideas is that life on Earth is characterized by scarcity and either anarchic or dictatorial structures of rule.

In the other—escapist—narratives, people seek their salvation away from Earth on space stations or other planets. In *Interstellar* (2014), in the year 2067, humanity will not be able to feed itself for much longer due to climate change and environmental destruction, which prompts a project to find a new habitable planet. The situation is similar in the film *Cargo* (2009), in which, in the year 2267, the surviving humans of an ecological collapse haven taken refuge on a poorly equipped space station in Earth's orbit. In the animated film *Wall-E* (2008), Earth is equally uninhabitable, with the result that people in the 29th century live on spaceships, fully cared for by machines, but have completely degenerated. In the year 2154 of the film *Elysium* (2013), Earth is still habitable, but the super-rich elite has bought its way onto a paradise-like space station, while the rest of the human race tries to somehow get by on Earth under precarious circumstances.

Both narratives show us two things: on the one hand, the consequences of the Anthropocene exacerbate existing inequalities: it is the group of people who were already vulnerable, marginalized, and poor who suffer the most from climate change and ecological collapse. On the other hand, the general Western discourse—which includes Hollywood cli-fi films—describes the negative consequences of the Anthropocene as relevant only insofar as they affect Western societies and nations. In that sense, the Earth that is, in fact, endangered by

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the Anthropocene is part of the ideal temperate climate zone. We see this in the imagination of an ideal climate in the space habitat on the way to the newly found habitable planet in *Interstellar*, which looks like a perfect imitation of a perfect piece of mid-Western USA: everything is green, there is a baseball field, fertile farmland, and neat farmhouses. Non-Western societies and nations, however, have for centuries lived in a world marked by extreme weather and climate, colonialism, exploitation, and genocide, and have faced the end of their worlds (Rothe 2019: 163). Does the global North just continue to pursue a certain lifestyle at the expense of others?

Nonetheless, one might think that in light of such horror scenarios, film audiences should rethink or even change their behaviour, because we certainly do not want to live in those possible futures—unless perhaps we are among the privileged few. Such a shift in thinking seems to be at least the wish of activists like Daniel Bloom, who developed the term cli-fi more than ten years ago (Bloom 2014b). According to this view, clif-fi could play an important role in bringing scientific findings to the attention of people—especially younger people—through dramatic plots and emotions, giving them hope that it is not too late to fight climate change (Bloom 2014a, Perkins-Kirkpatrick 2017).

Yet this view has two major flaws. Firstly, the benefits of emotionally charged disaster education and scare tactics are dubious at best and can backfire in paralysing people and giving them a sense of hopelessness (Becker 2017, Bryan 2020). Having said that, secondly, providing people with hope can be a "shadowy mirror" since "[l]iterature has always been a humanist endeavour: it intrinsically and helplessly affirms the value of the species" (Waldman 2018). To return to our film examples, there is, even in the worst climatic post-apocalypse, a glimpse of hope: in *Waterworld*, humans find the mainland in the shape of the top of Mount Everest; in *Mad Max: Fury Road,* the dictator is disempowered, and his water supplies are released; and in *Snowpiercer,* the surviving humans meet animals in the end. Humanity seems to go on somehow, so why change anything? This becomes especially clear in the escapist narratives because leaving Earth does not change the basic human attitude that nature would "exist" to serve humankind. We just search for a new planet to exploit, or we return to Earth as soon as a blade of grass grows there again—and we continue as before.

Science fiction does not offer us easy solutions to complex problems. The educational benefit, however, is to see our current values under a magnifying glass: We as humans will always survive no matter what. But what if there is no new technology, no place, no space station, no other planet to save us? To critically question these narratives of hope, but at the same time, not being paralyzed by hopelessness, is the real science fiction.

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Lesbian Resistance to Feminism in Annalinde Matichei's *The Flight of the Silver Vixen*

Race MoChridhe, Independent Scholar

Abstract: Since the 1970s, lesbian SF has been largely treated as a subgenre of feminist writing, obscuring incompatibilities between currents within lesbian culture(s) and egalitarian, democratic feminist politics. These tensions are explored in Annalinde Matichei's *The Flight of the Silver Vixen*, which draws on lesbian literary conventions alongside motifs from Britain's "Aristasian" subculture—a radical Traditionalist movement with an all-female membership that identified as two "feminine" sexes. In such a setting, romantic relationships between ostensibly female characters can be presented in complementarian terms that replicate and affirm social systems typically associated with patriarchy, such as monarchism, classism, and imperialism. Matichei's protagonist, Antala FiaMartia, transgresses the norms of her own world by deserting a military academy, leading a motorcycle gang, and stealing an experimental starship. Once she is in possession of the Silver Vixen, however, she finds herself assuming the role of responsible captain, transgressing stereotypical feminist ideals by respecting divisions of sex and caste. Matichei's approach represents the possibility of a non-feminist—even anti-feminist—lesbian literature.

Keywords: *lesbian science fiction; Annalinde Matichei; Flight of the Silver Vixen; anti-feminism*

A survey of existing critical work on science fiction and fantasy rarely describes writers or literary categories as "lesbian," as distinguished from the descriptor "feminist." Since the 1970s, lesbian fiction, particularly lesbian speculative fiction, has been largely treated as a subgenre of feminist writing—a trend compounded by the tendency of feminist critics through the 1990s to treat "feminist science fiction texts … as a unified undertaking … all grounded upon the same ideological foundations and all working together for the promotion of a single coherent feminism" (Hollinger, 1990, p. 229). The bond between lesbian and feminist frameworks established by writers and critics in theory was confirmed in practice by the economic realities of a limited market that, especially in the United Kingdom, consolidated feminist and lesbian literature under the same publishing houses. Non-feminist lesbian writing, particularly in speculative fiction, has reached significant audiences only with the growth of the Internet in the last two decades. This has created an approximately 20-year lag between the publication of speculative fiction and ant critical treatment of it (Duchamp, 2010, p. 135), further eliding non-feminist lesbian narratives.

The result has obscured incompatibilities and, in some cases, outright conflicts between lesbian culture and experience on the one hand and what may be considered a broad consensus of majority feminist politics (which aims at achieving the independence, autonomy, and equality of women *vis-à-vis* men through the promotion of "egalitarian, communal and democratic values" and the erasure of "class stratification" (Andermahr, 1993, pp. 109–10) on the other. One work that helpfully illuminates these tensions is Annalinde Matichei's science fiction novella, *The Flight of the Silver Vixen* (2011), which draws simultaneously on the classic conventions of lesbian literature and on the special motifs of Britain's "Aristasian" lesbian subculture, which understood itself to be "a 'women's movement' [that] is not part of the liberal consensus, but is royalist, elitist and aristocratic" (Rosetti, n.d., "St Bride's," para. 18), and which, on that basis, opposed what it understood as "feminism," directing especial ire at the perceived feminist coöptation of lesbian identity and liberation as tools for promoting social changes opposed by this subculture. Matichei's complex and nuanced inscription of lesbianism onto characters who uphold and embody a "royalist, elitist and aristocratic" vision of society thus serves to reappropriate the stylistic and symbolic means of such inscription as tools of resistance to the identification of lesbian identity with feminism.

Transgressing Feminism

The essential importance of the transgressive in speculative genres has been widely remarked and is well

summarized by McCracken (1998, p. 158): "A theory of transgression… argues that the popular text is successful because it operates at the borders of what is socially acceptable; and, in order to provoke a widespread interest, the text must… breach the bounds of that acceptability." Past studies have focused on the ways in which "the transgressive" can function as a point of identification for lesbian readers (Betz, 2011, pp. 1–2), as well as on the transgression of casting lesbians in roles conceived originally for men, for example, the hard-boiled detective and the space adventurer. Lesbian speculative fiction is consistently depicted as transgressing genre conventions and, in doing so, transgressing broader societal norms and expectations through "a lesbian appropriation of masculine, heterosexual and established forms" (Andermahr, 1993: 30). Insofar as influential feminists have aimed at overturning "masculine, heterosexual and established forms," lesbian feminist fiction may be justly characterized as transgressive in this way. The failure to examine non-feminist lesbian fiction, however, obscures the inadequacy of this paradigm for reflecting the experiences of non-feminist lesbians and their particular forms of transgression.

The Flight of the Silver Vixen offers a distinctive example. In *Flight*, transgression of genre norms occurs by placing the characters in a quasi-theocratic monarchy marked by strong distinctions of class, caste, and sex rather than typically imagined societies committed to egalitarian, anti-colonial, and democratic or anarchic feminist ideals. The key device making this possible is *intemorphism* (Matichei, 2011a, p. 212), an alternative paradigm of sexual dimorphism that divides the novella's protagonist culture, the *Herthelani*, not into women and men but into "two feminine sexes" that are colloquially called "blondes" and "brunettes," (or *chelani* and *melini* in the Herthelan language. For the Herthelani, hair color is a primary sexual characteristic). Although both present, in the eyes of outsiders, as "women," the Herthelani consistently differentiate the two in ways that determine courtship and parenting roles, religious status, social and career opportunities, and other key aspects of their lives. In this way, the society Matichei depicts in *Flight* transgresses the "established forms" of feminist utopia, suggesting their fundamental incompatibility with distinctive elements of lesbian culture.

Inscribing Lesbianism

To straightforwardly declare Matichei's work a "lesbian text" would be problematic. Past critics looked toward one (or more) of three criteria for establishing texts as "lesbian": authorship, aesthetic or sensibility, and readership or reception by lesbian audiences. The last is most easily proven but arguably the weakest criterion, however, its claim on *Flight* is strengthened by the author's cognizance of interest from a lesbian readership (Matichei, 2011b).

Matichei herself avoids the signifier "lesbian" in the course of avoiding the signifier "human." Her biographical statement declares her "an affable alien from an all-feminine world," while her blog ruminates on the difficulty of filling out an author profile on Goodreads when one is not human and therefore neither male nor female. Matichei (or at least her authorial *persona*) identifies, like many of her characters, as "blonde," or *chelana* ("Aliens").

This distinctive use of "blonde" and "brunette" as terms designating gender identities (unrelated, in real life, to actual hair color) will be recognizable to avid readers of British tabloids in the 1990s, who may remember the strictly disciplined "schools" and gay "embassy parties" of the young women calling themselves Aristasians. The Aristasians relied on flowers or ribbons to mark blondes and brunettes, since hair does not grow so cooperatively on Earth as on Matichei's imagined world of Sai Herthe. Not all Aristasians identified as lesbians, but many at the core of the movement/cult/subculture (depending upon whom one asked) identified as "girly-girls," simultaneously marking lesbianism and a commitment to "femme "(see Hoskin, 2017, for a treatment of this term) aesthetics. The world of Sai Herthe is a product of the retrofuturistic, Art Deco-inspired imagination of Aristasia, with which Matichei's publisher is closely connected.[1] *Flight* itself is a novelization of a short story—*The Princess and the Captain*—which first appeared on Aristasian websites

in the early 2000s.

Regardless of Matichei's own identity, the fact that much of her inspiration comes from (a very particular corner of) Britain's lesbian culture strengthens classifications of her as a lesbian author. However, regardless of the signifiers one might attach to the ladies who once took cocktails in London's Aristasian "Embassy," once the blonde and brunette "sexes" marked by ribbons at the embassy parties are written into a self-contained, biologically consistent world, Matichei is correct to say that she does not write about "lesbians" ("Aliens"), just as her characters are right to say that they are not "women" (Matichei, 2011a, pp. 64, 77). Both terms have significance only in the context of "schizomorphic" races such as our own, in which only one sex is "feminine."

We thus come to the question of "lesbian aesthetic" or "lesbian sensibility," noting that the crux of Matichei's transgression of the genre lies in the way that her writing consciously engages the conventions of lesbian literature and most especially, those used to establish characters as lesbian. There is no explicit sexuality in *Flight*, in keeping with a tradition of lesbian science fiction going all the way back to Charlotte Perkins Gilman's *Herland* (Betz, 2011, p. 68), and it would not be fair, in light of Matichei's own statements, to characterize her as a "lesbian author." However, Matichei very deliberately produces a particular effect that can only arise from superimposing lesbian signifiers onto very particular, not-technically-lesbian material. The tension between what Matichei is writing into the scenes and what, within the logic of her imagined world, the scenes actually contain, is significant.

Because of the way she thus "inscribes" lesbianism on material which, by her own design, resists such inscription, she creates what Farwell (1996) called:

> the tension between the ideologically determined traditional narrative rules, along with subsequent reader expectations, and the particular woman or lesbian who occupies this space. The tension between function and the character permits disruption and a shift in the narrative paradigm itself. (p. 59)

As we examine Matichei's inscription of lesbianism through her chosen conventions, we will also examine this shift, which destabilizes assumed connections between lesbian identity and feminist ideology.

The Autonomous Not-Woman

When we first meet *Flight*'s heroine, she could easily be mistaken for the protagonist of many other works of lesbian fiction. Matichei tells us that:

> One of the brunettes, tall, with Eastern features, clearly dominated the room with her energy and personality. Her lips were painted crimson, her almond eyes highlighted with jet black liquid liner. Her hair was swept in the dashing front quiff adopted by many bikers, with one strand calculatedly out of place. Her name was Antala FiaMartia, and very few people who heard it ever forgot it. (Matichei 2011a, p. 9)

The spirit of this description, if not its details, might remind a reader of Florence King from *Confessions of a Failed Southern Lady,* or perhaps Molly Bolt from *Rubyfruit Jungle*. Antala, standing on the bridge of an experimental starship that her biker gang has just stolen from the Royal Novaryan Navy, certainly merits Molly's description as "gutsy and wild" (Brown, 1973: fourth cover). The situation itself, alongside small details such as her height and oriental features, all contribute to what Andermahr (1993, p. 52) called the "foregrounding of atypicality" that works "to mark out lesbian difference in the text."

That Antala is atypical in a specifically lesbian-associated way is carefully indicated over the first few pages on which she appears. All explicit statements of attraction by characters in *Flight* occur from brunette to blonde or blonde to brunette, as when a blonde remarks that Antala is "simply dreamy" (Matichei 2011a, p. 20). Between Antala's introduction and this remark, however, we are treated to two significant moments in her interactions with other brunettes. As she looks out over the assembled gang, "[f]irst in her eyes" (Matichei 2011a, p. 17) is Chirenchihara Reteliyanhe ("Chinchi")—a promising cadet who, when Antala deserted her military Academy, followed her "because she felt raiAntala

(where "rai" is a term for nobility) needed someone to look after her." Matichei tells us that:

> It was a curious bond between the two brunettes. RaiChinchi felt that in raiAntala she had found a person of supreme quality whom it was her duty to stay beside. RaiAntala found her friend's devotion inexplicable and felt somewhat guilty at involving this young technician in a life of cocktail parties and midnight rides. The thing had irritated raiAntala. She wanted to waste her life. Why must she be forced to feel that she was wasting raiChinchi's life as well? … She often resolved to send her away, but… How could one send her away? (Matichei 2011a, p. 18)

The pairing could easily come out of what Elaine Marks (1979, p. 353) has termed a "gynaceum" novel—a mischievous older student inadvertently drawing an innocent in her wake. There is a deep emotional intimacy here, upon which Matichei inscribes lesbianism through the use of the "female gaze," in which "[l]ooking is … used as a mode of sexual pleasuring, rather than to carry connotations of dominance and power," as the male gaze does (Andermahr, 1993, p. 201). The context of Antala's features being identified as "Eastern" implicates the gaze in the other direction as well, following on the observations of Reina Lewis (2016, p. 164) regarding late 19th- and early 20th-century European womens' descriptions of being seen and admired by Ottoman women. The fact that Chinchi is "first in [Antala's] eyes" and follows the character in order "to look after her," alongside the allusion to the dynamics of the gynaceum, squarely frames the emotional intimacy of the pair within the lesbian literary tradition.

The intentionality of Matichei's use of the covertly sexual female gaze, so subtle with regard to Chinchi, becomes clearer in its deployment moments later as Antala looks at another brunette, Claralin Carshalton:

> RaiClaralin raised her glass. RaiAntala noticed her perfectly varnished red nails, her matching lipstick, her dashing black-lined eyes. RaiClaralin was a daring rider, a hard drinker, and a potential rival for the place of lead-brunette of the pack. She hadn't quite the nerve to challenge the present Captain; but if raiAntala slipped—well, raiClaralin was a good brunette to have in one's crew provided one could keep on top of her. (Matichei 2011a, p. 19)

Here we lack the reciprocal looking that Andermahr (1993, p. 202) found in Katherine V. Forrest's writing—which subverts the active/passive, subject/object dichotomy of the male gaze—but reciprocity is instead established by the fact that, in *Flight*, Antala's gaze responds to Claralin's activity and provokes positive response, as Claralin subsequently joins her with her drink (Matichei, 2011a, p. 19). The "femaleness" of Antala's gazing at another brunette is reinforced by the novella's having opened with an imitation male (which is to say, overtly sexual) gaze directed by a brunette soldier at the base commander's "gorgeous" blonde secretary—a gaze uninvited by any act and which, going unnoticed, does not engage its object (Matichei, 2011a, p. 7). Though distinctly "female," the motivations of Antala's gaze leave little room for doubt when the paragraph closes with a double entendre.

The bond between Antala and Claralin is tightened further after Claralin uses Antala's status as a deserter from the Academy to question her "legal and ritual fitness to be Captain of this ship" (Matichei 2011a: 25) and makes a bid to supplant her. The failure of Claralin's coup leads to a reconciliation delayed until the ship can land in a "green world," a stock feature of lesbian romance writing first identified by Zimmerman (1990) as a space in which the association of nature and womanhood reinforces a lesbian character's discovery of woman-identification. The green world is a haven from the intrusive, unnatural oppression of the urban space, associated with patriarchal civilization, and is often combined with a "wet world" motif, in which water signifies rebirth and awakening to the lesbian self (Andermahr, 1993, p. 82). It is thus no coincidence that the cathartic argument that goes on to bond Antala with Claralin only takes place once the two can be alone *en plein aire*. We are told that, "The woods surrounding the ship were every bit as dense as they had looked from the air. They smelled richly of some aromatic alien foliage in the midday heat" (Matichei, 2011a, p. 43). After Claralin airs her grievances,

Antala shares her own reason for wanting to speak privately. Among the members of their aristocratic gang is Mela—a princess of the imperial line who thus, according to custom, automatically became sovereign when they lost contact with the homeworld. Antala's rebellious habits are not overcome easily, however, and she confesses her lack of obedience to the princess. After Claralin hesitates to execute the corporal punishment Antala requests in order to make atonement, Antala cuts her own arm. Claralin, ashamed of her hesitation, cuts her own to make amends, and the two declare themselves to be sisters by a bond of blood (Matichei, 2011a, pp. 44–5).

The moment in which the two girls are reconciled is an unconventional union of the green and wet worlds, another means by which lesbianism is inscribed on the text (with a focus on emotional and spiritual dimensions over sexual ones); yet, as we have noted, the text resists this inscription because the characters are not lesbians. Indeed, they are not even "women," as Matichei emphasizes less than twenty pages later (2011a, p. 64). The conditions of intemorphism do not give rise to the signifier "lesbian" and offer no support for it. As will be seen, this distancing creates space in which common associations of lesbianism with feminism in contemporary Anglo-American culture can be disrupted and reconfigured.

Antala kills her would-be assassin in combat, which is reminiscent of the Amazon ideal extolled by Monique Wittig in *Les Guerrillères* or *Le Corps lesbien.* There is a deeper connection, however, between Antala's and Wittig's rejections of the term "woman." "Lesbian is the only concept I know of," wrote Wittig (1988: 440), "which is beyond the categories of sex, because the designated subject is not a woman either economically, or politically, or ideologically." Wittig praised the lesbian as archetype of female freedom; however, Antala's people, the Herthelani, are stubbornly not lesbians because they are not women subject to the discursive forces that produce "lesbian" as a signifier. Freed by their biological autonomy, the species does not need the term to define themselves against "heterosexual" women or against men. The Herthelani can structure their society and self-understanding on their own terms, and the result is unlike a typical lesbian feminist utopia, Amazonian or otherwise.

The Imperial Constitution of Femininity

Rosemary Marangoly George (1993/4, p. 97) has written extensively on the role of the British Empire in constituting women's independent identities in the Victorian and Edwardian periods through the colonial provision of an "authoritative self… defined against a racial Other in encounters that were located in space that was paradoxically domestic as well as public: the English home in the colonies." In George's analysis, in the effort to impress a "civilizing" influence on the colonial "wilderness," feminine-coded domesticity could be read as an act of heroism and a form of national service. It created a bridge to public participation and political impact that rendered "the modern individual woman… first and foremost an imperialist" (George, 1993/4, p. 97) managing her servants like "unruly children" at the fringes of an empire depicted in the literature of the day as a household writ large (George, 1993/4, p. 108).

Many of the same simultaneously imperial and domestic motifs can be found in the rhetoric of the Herthelani, but are used to define different objects. On one level, they distinguish themselves clearly from "the Outlander," i.e. any of the male/female dimorphic races of other worlds. The Herthelani experience the women of those races as unsettling in their union of what, to the Herthelani, are distinct blonde and brunette features and mannerisms (Matichei, 2011a, pp. 77-8). The men, however, are not included in "full humanity," and are often implicitly compared with animals, as when beards are designated "face-fur" and said to be removed by some *mascûls* (as they call schizomorphic males) in order "to make themselves look more human" (Matichei, 2011a, p. 58). The Herthelani, however, are not an expansionist people and maintain no rule over or settlement among schizomorphs, who are engaged only in diplomatic contexts or patrols against piracy. The otherness they offer thus exists only on the fringes of the Herthelani consciousness.

To the Herthelani, the true Other is within. No less than in Victorian and Edwardian British society as ana-

lyzed by George, the Herthelani "authoritative self" is born in the union of the personal and domestic sphere with the public (and, indeed, the cosmic) sphere by the imposition of civilizing order on a strange wilderness; but that wilderness is conceived as the terrain of the ego. The Herthelani see themselves as the *memsahib* of British India saw her native servants—children in perpetual need of compassionate but stern discipline.

The Herthelani envision their polity as "the great *Familia* of Nation and Empire" (*Flight* 33) and personify it so far as to call themselves "daughters of the Empire" united in a common bond as "child[ren] of the Empress." Mela, as she grows into her role as acting queen in the absence of other authority, comes to refer to her friends and crewmates as "my children" (205). These political deployments of the signifier of motherhood are conditioned by the Herthelani concept of the monotheistic god they call Mother, whose image underlies their sense of both political and spiritual order. In Her name, the Empress reigns over the Golden Chain of hierarchies extending down to the lowest levels of the *ranyam* (queendom), such that the mistress of a household may even refer to a bonded maidservant older than herself as "child" (Matichei, 2011a, p. 39).

These discourses have obvious resonance with the philosophies of Cixous (1976), who has suggested that the mother is the fundamental metaphor of women's writing, and even more pointedly with Andermahr's (1993, p. 190) observation that "the mother/child dyad" is a "motif common to the lesbian romance. At its best, this motif is used to represent the mutual nurturance of the lovers. But frequently, it appears as a more one-sided affair in which one woman nurtures the other." This motif is clear in the mentoring relationship (examined further below) between Antala and Queen Ashhevala, a young monarch who places herself under Antala's tutelage with expressions of gratitude in which her status as an orphan is reiterated, metaphorically extending Antala's role beyond that of teacher (Matichei, 2011a: 160). On a subtler scale, this dyad also characterizes the relationship between Antala and Claralin insofar as their aforementioned reconciliation is made possible only by the dissipation of competitive tension through Claralin's confession that she depends on Antala for the resolution of difficult decisions (Matichei, 2011a, p. 27).

In Matichei's hands, the inherently unequal relationship of mother and child becomes the organizing principle of a hierarchical society diametrically opposed to the standard values and norms of feminist utopias. There is a passing resemblance to Katherine V. Forrest's *Daughters of a Coral Dawn*, where autocratic rule is exercised by a leader known as "Mother." In *Daughters*, however, this is depicted as morally ambiguous and fraught with tensions. In *Flight*, the symbolic motherhood of authority figures is fundamentally positive and repeatedly depicted as the necessary means for the individual's maturation and spiritual growth. This draws on motifs common to utopian lesbian separatist literature that connect a "desire for the pre-oedipal relation to the mother" with a construction of lesbian identity as a quest for union with the collective, rather than a desire for individuation and self-expression or realization (Andermahr, 1993, p. 122). Matichei's treatment, however, draws on the distinctive feature of a sexual binary within the bounds of femininity itself to overcome this dichotomy between the individual and the collective.

The dialectical resolution in *Flight* can be understood in light of Irigaray's (1985) notion of mimesis. For Irigaray, there are two modes for the performance of femininity. The first is "masquerade," in which a woman performs femininity without self-awareness. The second is "mimicry," in which

> One must assume the feminine role deliberately… to convert a form of subordination into an affirmation, and thus to begin to thwart it… Women gain thereby a sort of ironical double consciousness, a presence in their apparent absence… As Irigaray points out, "…women… are not simply resorbed in this function. They also remain elsewhere," simultaneously visible and invisible, present and absent. (Andermahr, 1993, p. 116)

The Herthelani are extremely conscious of performance. When Antala's crew steals the Silver Vixen, Matichei notes that "for all that this hijacking was no

more than a prank, it was also the distant and playful echo of a State occasion" (10). The word "playful" bears on the Herthelan concept that human existence is fundamentally performative and thus playful in the sense described by Huizinga in *Homo Ludens* (1949, pp. 100–1): "One might call society a game in the formal sense, if one bears in mind that such a game is the living principle of all civilization." Matichei writes of Antala's gang: "hoverbike bands like this one had an ethos that, while outwardly rebellious, was in some respects super-Raihiralan—taking the old aristocratic warrior-virtues as the basis of their play. But then do not the old books tell us that all worldly action is but play?" (Matichei, 2011a, p. 22)

The Herthelan understanding that all action is play in the performance of a role manifests in two ways. While Antala plays the role of captain and grows into its reality over the course of the book, Mela is the group's sovereign in reality but has to slowly learn to play the role. The shift in dynamic from the camaraderie of the gang's dynamic back home to authority in their new circumstances is difficult for her at first, requiring both a compartmentalization of her own psyche and the ability to manage others' newly compartmentalized interaction with her. "I do not greatly relish the authority that is thrust upon me," she informs her crewmates/subjects,

> "but be assured that I intend to do my duty and not dilute it… The audience is now at an end."
>
> The company seemed at a loss what to do. Were they expected to disperse? If so, where to? RaiEstrelle broke the silence. "Are we still to call you 'Your Highness', rairaiMela?"
>
> Everyone laughed. It was a laugh of dissolving tension.
>
> "No," said rairaiMela. "We are back to our normal selves now. We shall have to learn—as all in authority learn—the difference between our high functions and our small selves. For now I am Mela again. But don't forget that your Princess watches over you."
>
> Was that a reassurance or a warning? Either way it seemed curious and out of character. And yet, no one took it lightly. The Princess was another persona: another thing-spoken-through, that is, another mask. But high masks are of jade or gold or ivory, carved with eternal forms, while our small selves are but fleeting bundles of impulse and emotion, blown by the winds of the world.
>
> "Oh, thank Heaven for that, rairaiMela-sweetie," said raiCharmian. "Let's have a drink." (Matichei, 2011a, p. 26)

This reciprocity demonstrates that performance is capable of making reality, as it ultimately makes Antala a real captain (Matichei, 2011a, p. 138), but it is not viewed as an arbiter of reality. Things have, for the Herthelani, essential natures that abide whether or not performed, and their art of life is to learn the performance of what one truly is in order to become more fully oneself. Blonde and brunette femininity are performed, but they are performed as royalty is—as a way of transcending the "fleeting bundles of impulse and emotion" and identifying oneself with the "high mask." Just as a monarch (ideally) strives to internalize the dignity, poise, and wisdom associated with the crown as institution or office, and thereby seeks to perfect the manifestation of a role owned from and by birth, so too the Herthelani understood their identities as blonde or brunette as both inherited and perfectible, with every refinement of the performance leading the performer back toward her own essential nature. Interestingly, the performance of royalty and femininity are brought together directly when, amidst the tumult of arriving on an alien world and suffering a traumatic assassination attempt, "The Princess retired to the small room set aside for her, to attend to her hair and makeup. She felt it part of her duty to look impeccable" (Matichei, 2011a, p. 85).

In this connection of performance and leadership, there is a nod to Sheri S. Tepper's *The Gate to Women's Country* (1989, p. 126), in which Morgot, an important member of the Marthatown Council, informs her daughter Stavia that:

> …half of what we do is performance. Ritual. Observances. If we are seen to be in control, the people are calm and life moves smoothly… Doing nothing

with an appearance of calm may be more important than doing the right thing in a frantic manner."

Stavia spends the novel troubled by the feeling of artificiality, often imagining her performative self as an actress usurping her real self. The reader, too, becomes increasingly aware that performance is a kind of duplicity taking its toll on the councilwomen, building to Morgot's reflection that if "the Lady has a heaven for the merciful, we are not sure any of us will ever see it" (Tepper, 1989, p. 291). Tepper's treatment of the subject is characteristic of feminist literature, in which the best light in which performance can be found is as a chosen strategy of resistance to enforced or unconscious performance, à la Irigaray (Wagner-Lawlor, 2002, p. 115).

The Herthelani, however, neither perform for men (as Irigaray's masquerading woman does) nor against men as a subversion of forced performance (like Irigaray's mimicking woman). There can be, for them, no notion of woman as "man's equal" or "a potential man," as one can find in Irigaray's thought (Wagner-Lawlor, 2002, p. 84), since their society is devoid of men altogether. While one could potentially apply some of Irigaray's analysis on those points to the performance of "blondeness" and "brunetteness," the Herthelani's position of discursive autonomy vis-à-vis masculinity depoliticizes their performance of femininity, because Herthelani femininity has no antithesis and hence does not exist in a power relationship with anything else. Under those conditions, the performance of femininity is not, as in our world, a political act, but instead becomes a spiritual one.

Upon crash-landing in the queendom of Astarche, the Silver Vixen is invited to send a senior officer to audience with the local queen. Antala is fitted in a captain's uniform and Mela offers her a "True Sword"—a blade forged by an hereditary priestess dedicated to Sai Vikhë, the Herthelan angel of battle—to complete the ensemble as her royal representative. Antala, however, demurely refuses the sword, claiming that she is not worthy to carry it. Over the course of the novel, Antala's feelings of inadequacy and imposture diminish and when, toward the novel's end, Mela is captured by alien (male) pirates, Antala does not resist the Princess' new instruction to gird herself with "the Captain's sword" for the rescue mission.

> Silently the Captain took the sword and unwrapped it. The sacred steel seemed to cast a light over the whole control room; not a physical light but a light of the Spirit. In old times it was said that Sai Vikhë, the Angel of Battle, resided in a True Blade in all her winged glory...
>
> The Captain was every inch an officer and noblemaid. The uniform had always had the effect of transforming her [Antala] into something a light-year from her Road Angel [biker] persona, but the sword... changed her entirely and gave her an aura... something that might be called a chemistry between the soul of raiAntala and the soul of the sacred blade. (Matichei, 2011a, p. 181)

The actual rescue and the combat with the pirate captain are, ultimately, anticlimactic to this moment, in which Antala, within the terms of Herthelan religion, becomes a saint—united in spirit with the divine and thus restored to oneness with the Mother. In mentioning that she was "every inch an officer," the text unites also the dyad of subject and sovereign, conceived as derivative of child and mother. This reunion is indicated by Antala's taking of the sword she had previously refused, representing the final alignment of her will with that of the royal authority.

This kind of mystical identification is a common theme of world mythology, but Matichei uses it distinctively to transcend the traditional tension in lesbian literature between identity through woman-identification and identity through erotically charged individuation; in the "chemistry between the soul of raiAntala and the soul of the sacred blade" Antala is united with the Mother both inwardly (through her identification with the divine presence of Sai Vikhë) and outwardly (through the normalization of her hitherto unofficial status in complete obedience to her royal mistress), yet she remains distinctly Antala, and possibly more fully Antala than she has ever been. The art of performance is key to this transformation, as it enables the "presence in... apparent absence" that Irigaray identified as an "ironical double consciousness," though it is not ironic in this case, but the mark of what Sanskrit literature terms a

jivanmukti—one whose simultaneous self-awareness of both her lesser and greater self permits enlightenment even while remaining engaged in worldly existence. Bathed in the aura of the angel who patronizes her social function, Antala is at once transported into the divine realm and stubbornly present in the mundane. It is a maneuver that would be impossible without Antala's conscious use of mimesis in entering into the performed role of the Captain, which is, within the parameters of Herthelan sex roles, intimately connected with the role of brunette (as will be explored more fully below). The mechanism is one of feminist subversion and resistance to patriarchy but, in the absence of a patriarchy to resist and subvert, it is repurposed toward an end that, with its religious overtones and its close connection to caste, is radically incongruous with the feminist utopias of most lesbian science fiction.

This incongruity is paradigmatic of Antala's entire character arc. In common with many lesbian protagonists, she begins the story beset by feelings of "social stigma and self-contempt" arising from her failure to perform expected social roles. Stimpson (1981, p. 364) identified two possible arcs of protagonists from this point as "the dying fall," which creates tragically martyred heroines (like *The Well of Loneliness*' Stephen Gordon, discussed below), and "the enabling escape," in which the protagonist successfully rebels against stigma and self-contempt. Typically, this involves a rejection of the norms or values of the dominant society. Because Antala's initial stigma as a deserter from a military academy is related to rank and caste, rather than erotic sensibility, rebellion against self-contempt comes not in the form of rebellion against the social order but of return to it. This return can, in intemorphic terms, be accomplished without capitulation to heteronormativity or the patriarchy. Instead, the context of Herthelan society renders that return an imperialist triumph of the higher self—the "authoritative self" realized through donning the mask of any of the eternal roles, from princess to maidservant, that symbolically join the domestic, imperial, and cosmic planes—over the wilderness of the "native" ego. This is the deeper meaning of Mela's comment to the crew when their contact with the Homeworld is initially severed that "we are, as it were, an outpost of the Empire" (Matichei, 2011a, p. 26). To colonize oneself in the name of the divinely-sanctioned, civilizing order of Herthelan society and thus to become such an "outpost of empire" is the deepest aspiration of Herthelan culture, and that internalized imperialism is what renders coherent their conception of themselves as two distinct but complementary "feminine sexes," especially against the more distant background of the boorishness, lawlessness, and selfishness of the (usually male) "Outlander."

Sex and the Social Order

The common rejection of the term "woman" by the Herthelani and Wittig has already been observed but, in the division of the sexes of blonde and brunette, we find one of *Flight*'s most notable transgressions against utopias such as Wittig's. Antala's culture does not compel her to define herself against a heterosexual model of femininity. A comparison was likewise drawn already between Antala and the heroines of *Confessions of a Failed Southern Lady* and *Rubyfruit Jungle* in respect to the fierce independence and "wild and gutsy" behavior that marks all three protagonists as atypical within their social and cultural contexts. Here too, there is an equally notable difference, in that both Florence King and Molly Bolt rebel against socially conditioned models of femininity to become tomboys, while no similar process is necessary or possible for Antala. Her autonomy from all male/female dichotomies undermines the way in which, for those other heroines, "The sign 'lesbian' works to specify a female identity premised on a rebellion against normative heterosexual femininity" (Andermahr, 1993, pp. 52–3). Insofar as "the specificity of lesbian textuality has historically frequently resided precisely in opposition to conventional notions of femininity," (14) Matichei's text once again resists the schizomorphic lesbianism that has been inscribed upon it.

The significance of this maneuver becomes apparent through consideration of the ways in which Antala's identity is, within the context of her all-feminine society, autonomous from any definition against men or masculinity. Hélène Cixous' critique of "patriarchal" binaries as inherently subordinating all feminine-coded terms (Andermahr, 1993, p. 113) has deeply influenced the development of lesbian, and particularly lesbian feminist, speculative fiction. Many writers, such as Sally Miller

Gearhart, have premised their utopias on a reversal in which the feminine binaries become systemically privileged. Others have rejected this approach, arguing that it reinforces the binary system that Cixous has shown to be inherently oppressive (131). Instead, they advocate a total rejection of the binaries by refusing them status as metaphysical realities and asserting them as social constructs that can, and should, be deconstructed. The conception of Herthelan society presented in *Flight*, however, is a third option.

Intemorphism, in placing a sexual binary within an all-feminine society, radically positions both halves of the binary within femininity—sun/moon, spirit/body, nature/culture, etc., and the Herthelani thus untroubledly reproduce fairly rigid constructions of sex roles. Brunettes are "gentilmaids-of-affairs" to whom most worldly business naturally falls. At any outbreak of trouble, from space combat to atmospheric turbulence, Antala orders Claralin to "strap the blondes in" or "look after the blondes" (Matichei, 2011a, pp. 13, 22), at which point they are removed from the bridge. During an invasion of the ship by hostile forces, a blonde asks Mela, "What do the brunettes think about it? They will never discuss these things with blondes for fear of worrying us. Don't they imagine we can think of these things for ourselves?" Mela answers simply, "I know how you feel, darling, but at a time like this they need more than ever to maintain the order of things" (Matichei, 2011a:, p. 86). During the blood sister ceremony, we read that "the blood horrified her [Claralin] as if she had been a blonde," (Matichei, 2011a, p. 45) and, in a similar vein, the suddenness of the Silver Vixen's (herself blonde, like all ships [Matichei, 2011a, p. 18]) stop on the far side of the wormhole is indicated by the simple statements "Cocktails were spilled. Blondes gasped" (Matichei, 2011a, p. 22).

The impression might easily be taken from this sampling that brunettes stand in for men in a new kind of sexism. The dynamics between the blonde and brunette sexes are better understood, however, as an organic outgrowth of the internal logics of a certain kind of lesbian literature, than as a repetition or emulation of the patriarchal paradigms of our world. While Antala's seemingly patronizing dominance, like her unwillingness to take orders, might be read in our world as stereotypically male, her world offers no such frame of reference. These qualities, no less than their opposites, are instead, by default, thoroughly "feminine."

In her critique of *Daughters of a Coral Dawn*, Andermahr (1993, p. 152) observed that:

> The emphasis on sex and the novel's antidemocratic character make the text quirky and divergent on two fronts. It is possible that the two features are linked and that the existence of power relations, disparities of age, status, attractiveness, make possible within the terms of traditional romance the eroticization of women's relationships; they add a sexual frisson which is less prominent in the relationships between Gearhart's interchangeable hill women [in *The Wanderground*].

Daughters of a Coral Dawn is not, of course, the only novel to use inequality as a catalyst for lesbian eroticism. One thinks, perhaps, of Jane Delynn's (2003) *Don Juan in the Village*, or Sarah Schulman's (2013) *After Delores*, both of which evince a strong interest in the relationship between lesbian attraction and disparities in social roles and standing (Andermahr, 1993, p. 220). The effect of shattering the lesbian romance's traditional egalitarianism (Andermahr, 1993, p. 169) has tended to be dark, however. *Daughters* presents us with a quasi-dystopian world of machination and manipulation, while *Don Juan* mires us in the seediness of shallow, objectifying relationships, and *After Delores* chronicles the deteriorating mental condition of an increasingly disturbed and violent young woman. The tragic implication of all three is that a relatively bloodless conception of the lesbian solely as feminist political subject is the only defense against societal and/or psychological breakdown.

In *Flight*'s presentation of inegalitarian Herthelan society, blondes and brunettes have strictly defined, complementary roles, and the entire population is divided into four hereditary castes with distinctive functions and differing levels of prestige. This offers a kind of utopia capable of accommodating a robust, difference-based expression of erotic sensibility, in which pairings and attractions can be driven organically by the lure of the

exotic, the solidarity of the shared, and the logic of the competitive. The romantic undertones of Antala's relationship with two other brunettes, Claralin and Chinchi, has already been remarked. Her movement throughout the book toward Claralin, in contrast to a general lack of development of her relationship with Chinchi, depends vitally on, first, the consciousness of common purpose and way of life shared by Antala and Claralin as members of the *raihira* (warrior caste) in contrast to Chichi's status as *haiela* (priestly caste) and, second, on the competitive edge to their dynamic due to their caste identities' construal of them as natural rivals for the captaincy. Both the pull factor of their shared status and the push factor of their rivalry are necessary strokes in the engine of their romantic tension; if either was missing, the romance would stall. A straightforward reading of the work thus suggests that lesbian eroticism could be fundamentally incompatible with a feminist ideology insistent upon radical egalitarianism and total woman-identification. Such an interpretation of Matichei's work would offer a confirmation of the hypothesis offered by Andermahr (1993, p. 152, quoted above) in respect of *Daughters of a Coral Dawn*, and would also establish *Flight* as an outlier against a broader field of works that, like Sally Miller Gearhart's *The Wanderground* (mentioned by Andermahr), attempt to frame romantic relationships between women within societies defined by relative homogeneity in political influence, economic status, and social roles. To the extent that *Flight*, like *Daughters*, succeeds in depicting these forms of difference as integral to the development of romances between its characters, it drives the logic of a lesbian polity toward the illiberal

This unfolds most explicitly in the relationship between Antala and the blonde Queen Ashhevala III of Astarche, the queendom in which the crew of the Silver Vixen find themselves after crash-landing on an alien world also populated by intemorphs. The young queen is tutored by her vizier who, we quickly come to suspect, is manipulating the regency to her own advantage. During an initial audience with Antala, the queen becomes impressed by Antala's understanding of the metaphysics of statecraft (gained through her aristocratic education at the Academy) and places herself under Antala's instruction. This relationship continues over several visits as Antala teaches the young queen the symbolism of everything from chess to palace groundskeeping, elucidating the queen's role as representative of divine authority on the earthly plane and thus the fount of of all earthly authority.

Matichei's awareness of the disjunction between the illiberal utopia she is constructing and the more typical "egalitarian, communal and democratic" society figured in most lesbian feminist literature is shown by her recontextualization of the green world. In most lesbian writing, the green world is contrasted with urban environments depicted as "dystopian" and "inimical to lesbian romantic fulfillment" (Andermahr, 1993, p. 182). A classic example is Fiona Cooper's novel *Jay Loves Lucy*, set entirely in London but placing all of Jay's sexual fantasies in gardens, beaches, country hotels, etc. Queen Ashhevala's garden, however, is located at the heart of the palace, itself located in the heart of the capital city of Astarcheana, and Antala explains that the fountain and its surrounding gardens are the point from which the entire palace complex, the entire city, and ultimately the entire nation, unfold. This explicit connection of the green world to the foundation of the city and civilization metaphorically reclaims the traditionally "patriarchal" urban space.

What makes this transgressive of the feminist SF genre is not simply *Flight*'s approval of a robust monarchy and the caste system (threats to which are depicted as the root cause of most social ills among the Astarcheans) but the use of conventions of lesbian fiction to support that approval. Once again, the green and wet worlds frame the interaction of two feminine characters, as all meetings take place within the palace garden in the presence of the central fountain. Since the fountain represents the wellspring of imperial authority through the royal bloodline, much of Antala's teaching and of the queen's reflection is on the garden as a transgenerational symbol of royal authority. A strong parallel is thus suggested between this setting and that of a classic work of lesbian literature. As Andermahr (1993, pp. 177–8) explained:

> The most famous example of the green world motif … is Stephen Gordon's country estate Morton in [Radclyffe Hall's] *The Well of Loneliness*, which… carries

> a different meaning to the green world myth in the contemporary lesbian romance. Morton represents ancestral roots, class privilege and social inheritance, and is therefore a patriarchal space. Moreover, nature is represented as affirming, not lesbian relationships, but the heterosexual order.

The essence of Matichei's thesis seems to be precisely that "ancestral roots, class privilege," and "social inheritance" are not inherently "patriarchal," but manifest in an all-feminine society as well. Indeed, Queen Ashhevala's garden is an essentially *matriarchal* space, and this identification is strongly reinforced when the Queen is encouraged by this matriarchal legacy to confront her vizier, who is revealed to be secretly in league with male aliens. The masculine/feminine-associated dichotomies identified by Cixous are nullified by intemorphism, which thus allows the symbol of the garden to be considered feminine in what was a patriarchal space in *The Well of Loneliness* (Hall, 1928). Furthermore, the relationship between Antala and Queen Ashhevala is opposite-sex within an intemorphic framework (brunette to blonde) but carries all the signifiers of a same-sex relationship in the eyes of a schizomorphic reader (since both are "feminine" and appear superficially as "women"). Hence the refusal "to name lesbianism as the major organizing discourse of the protagonist's sexual identity" that (Andermahr, 1993, pp. 72–3) read as "a refusal of fixed notions of sexual identity" in some other works of lesbian fiction, such as Maggie Redding's *The Life and Times of Daffodil Mulligan*, in *Flight* instead affirms two fixed sexual identities within femininity itself, rendering homo- and heterosexual dynamics ambiguous, and permitting the full investment of a feminine-feminine relationship within a setting of "ancestral roots, class privilege, and social inheritance." The reader might object that the technically opposite-sex couple within the garden fails to carry this sleight-of-hand out of the novella into real-world lesbian discourse, but Matichei forestalls this objection through use of the lesbian *Bildungsroman's* convention of the young student infatuated with an older teacher (Marks, 1979, p. 353), which is found in Queen Ashhevala's self-imposed tutelage to Antala.

The self-consciousness of this symbolic interaction with *The Well of Loneliness* is suggested by the fact that another author at Sun Daughter Press, Alice Lucy Trent, was fond of using that novel as a meditation on the ways in which she perceived post-1960s feminism to have harmed women through its attack on the institutions of "traditional" society, as well as her particular ire that the cause of lesbian acceptance had been used as a rhetorical tool for dismantling values and institutions in which she deeply believed. In a conversation on the Aristasian Internet forum, The *Aphrodite Cocktail Bar*, during the late 1990s, one Miss Ariadne began:

> I can see the great misery that awaits Stephen because of solid Edwardian morality. This was the essence of my comment... that, despite the depredations of the Pit [contemporary culture], lesbians are freer now to follow their natures, than in, say, Quirrie [1950s] times, precisely because of atomization and the destruction of traditional culture. ("The Well")

Miss Trent responded:

> [L]et us consider the position of Stephen... There were Bohemian circles in London and Paris... where she could have lived in complete acceptance. Her tragedy lies not in the fact that she cannot live as she chooses, but that she cannot combine living as she chooses with the only life, the only world that she finds acceptable: the solid, decent world of English better-class country life... And this, so obvious in Stephen's case, is generally true of the so-called "oppressive moralities" of the pre-Eclipse [pre-1960s] world. They compelled not so much by brute force, as because the social and spiritual benefits they offered made people want to be part of them and to enjoy their goodness. ("The Well")

In the context of such an interpretation of Hall, Queen Ashhevala's garden is precisely the reconciliation of Stephen Gordon's life with "the only world that she finds acceptable." Indeed, this is the essence of Matichei's union of inscribed lesbian identity and Traditionalist, conservative social ideals. The unique dynamics of intemorphic sexual difference enable the reproduction, within an exclusively feminine space, of hierarchies and complementarities that feminist SF has traditionally assigned to patriarchal societies. The performance

of femininity, absent a masculine "other," no longer has a political or social context. It becomes instead an internalized, spiritualized performance in which apotheosis is rendered in the terms of the idealized colonial womanhood of the late Victorian empire.

Conclusion

Matichei's distinctive union of social dynamics commonly conceived in feminist thought as opposites diffuses a fundamental tension driving the majority of lesbian (feminist) speculative fiction. As Betz (2011, pp. 18–19) explained:

> [R]epositioning of the lesbian character as hero… complicates the conventional genre definitions of fantasy literature… [involving] some kind of restoration… Underlying these narrative outcomes is the presumption that… the social and cultural institutions once under threat retain their influence; in other words, traditional concepts of law, religion, philosophy, marriage, gender… have rightfully been verified. The essential conservative nature of fantasy genre texts assumes the importance of the underlying heterosexual, still predominantly patriarchal, representations of society. Although the lesbian characters in fantasy novels may remain outlaws at the conclusion of the plot, they remain capable of re-initiating actions that continue to challenge and/or threaten that worldview.

Thus, in a typical work of lesbian speculative fiction, casting a lesbian character in the role of protagonist sufficiently destabilizes genre expectations that the casting itself satisfies the theory of transgressivity described by McCracken (1998) and drives the text in "challeng[ing] social standards and norms" (McCracken 1998, p. 158). This does not happen in Matichei's work, however, because the traditions of Herthelan society are not truly threatened by the heroine. Other works of lesbian speculative fiction displace the transgressive role from an individual female protagonist to a female-only society, but these are societies in which women have been extracted from a schizomorphic duality to function without men and have thus formed communities consisting of a single sex, organized in markedly different ways from the order of historical, heteronormative civilizations. Matichei's Herthelani, however, are not extracted from a schizomorphic paradigm, but instead possess an autonomous sexual duality that reproduces many of the cultural forms of historical, schizomorphic societies.

Where lesbian fiction generally presents a protagonist who transgresses the heteronormativity of her own society, and lesbian speculative fiction tends to present a society that transgresses the heteronormativity of the reader's culture, Matichei draws on the distinctive literary heritage of lesbian fiction to present both a protagonist and a society that transgress the genre conventions of lesbian speculative fiction precisely in failing to transgress so many of the expectations of the traditional social order. The result is a unique presentation of lesbian identity as nontransgressive and thus compatible with many of the conservative values and ideals against which (lesbian) feminist science fiction has historically defined itself, as well as an implicit challenge to feminist claims of solidarity (or even compatibility) with lesbian culture and experience.

Notes

[1] Sun Daughter Press is operated by an organization called the Daughters of Shining Harmony, which emerged out of Aristasia in the mid-2000s. Within its very small catalog may also be found the Aristasian philosophical magnum opus—Alice Lucy Trent's *The Feminine Universe*—and the "Aristasian Authorized Version" of *The Gospel of Our Mother God*—a collection of religious texts that played a significant role in the development of Aristasia (Sedgwick, 2004, pp. 216–17).

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JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

Heroine or Damsel in Distress: Traversing the Parallel Universes of Timeline's Kate Erickson

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Abstract: While Michael Crichton's novels have been criticized for their shallow characterizations, shifts in the depictions of female scientists made in the adaptation of his works to the big screen raise far more significant concerns. This essay focuses on one such character, Kate Erickson of *Timeline*, following her evolution from novel through intermediate screenplay to feature film. Comparisons are drawn to *Jurassic Park*'s Ellie Sattler, demonstrating a troubling trend of diminished scientific agency, decreasing confidence, and increased reliance on romantic attachment. Such a characterization plays into common negative stereotypes of female scientists in popular media, as noted by Roslynn Haynes, Eva Flicker, and Jocelyn Steinke, and can act as a contributing factor to the commercial and critical failure of the film.

Keywords: *Michael Crichton; Timeline; Kate Erickson, Jurassic Park, depictions of women in science fiction*

Timeline and the Problem of Female Characterization

On the surface, the Michael Crichton science fiction novel *Timeline* (1999) tells the story of archaeologist, Professor Edward Johnston, and his team's archaeological reconstruction of Castelgard, a French town that passed between English and French hands during the Hundred Years' War. Unbeknownst to the scientists, including language and medieval weapons expert Assistant Professor André Marek and graduate students Chris Hughes and Kate Erickson, their private financier, ITC (International Technology Corporation) has developed time travel into the past, and its president, Robert Doniger, intends to use this technology for financial gain. When the team excavates a lens from the professor's bifocals as well as a handwritten message asking for help, reliably dated to the 14th century, Doniger admits that the professor is trapped in the past. Marek, Hughes, and Erickson agree to travel back to the 14th century to rescue their mentor, and the adventure begins, but nearly turns tragic when the time machine is damaged.

The novel spent seventeen weeks in the top fifteen of the *New York Times* bestsellers list, peaking for four weeks at #4 behind three of the *Harry Potter* novels. As with Crichton's other novels, a tremendous amount of research was put into its writing, both in terms of the theoretical underpinnings of time travel and medieval history. The result, according to Linda Bingham (2006), is "a remarkably successful and thrilling page-turner." She summarizes the plot as a quest by graduate students "to rescue not a damsel in distress but rather their own beloved professor." While some critics found the science fiction aspects of the plotline flatly derivative, others, like Bingham, lauded Crichton's relative faithfulness to the appropriate medieval social conventions and traditions.

Although the novel was a commercial success, the opposite was true of its 2003 film adaptation. According to IMDB.com, which displays a dismal 5.7/10 rating for the film, while it had an estimated $80,000,000 budget, the film only grossed $19.5 million in the US between November 28th, 2003 and February 13th, 2004. *Rotten Tomatoes* gives it an 11% fresh rating. For example, Roger Ebert (2003) laments that the film "consisted of groups of characters I didn't care about, running down passageways and fighting off enemies and trying to get back to the present." There are significant changes in the two main female characters in the transition from the written page to the screen, especially in terms of their romantic relationships and personal agency. In particular, the Kate Erickson of the book and film reflect two very different realities, and, as in the case of the time travelers themselves, the jump from one world to the other involves not only significant pain, but the actual disintegration and reassembly of the character from one setting to the other.

It should be noted that weak characterization was also a general problem in the novel. For example, Tom De Haven (1999) from *Entertainment Weekly* praised the novel for its "high adventure" and was willing to

overlook the fact "that none of the characters, whether hailing from the 14th or 20th century, display much personality." On the other hand, Daniel Mendelsohn of the *New York Times* generally criticized Crichton's novels as having characters that have little more than "a name, a one-line physical description and a salient trait that will come in handy after the... [bad guys] start attacking." For example in *Timeline*, "'Katherine Erickson—ash blond, blue-eyed, and darkly tanned... was an avid climber' is about as complex as a Crichton character gets—or needs to get. Can it be a coincidence that Kate... will find herself dangling from the roof of a medieval banquet hall?" (Mendelsohn, 1999). Such issues led Bob Hoover (1999) of the *Pittsburgh Post-Gazette* to refer to the novel as "Another script disguised as a novel." Andy Taylor of *Andy's Anachronisms* complains that characters in the novel "fall in and out of love with little more than a one-line sentence describing their feelings and motivation" (2005). Crichton acknowledges the plot-heavy nature of his works, explaining that "my stories are not character driven. Usually I have the story first, and make the characters follow the story I have prepared for them" (Michael Crichton: A Chat About '*Timeline*', 1999). Some of these characterization issues in the novel carry over into the film adaptation. Kevin Carr (2003) of *Fat Guys at the Movies* gives the film 0.5 out of 5 stars, adding that "As with many Michael Crichton stories, '*Timeline*' is filled with incredibly weak characters. They are constantly making bonehead decisions and doing stupid things." The two romances that develop over the course of the film, between Chris and Kate, and Marek and 14th century Lady Claire, are singled out for particular scorn by Andrea Chase (2003) of *Killer Movie Reviews*, who gives the film 1 out of 5 stars), calling the romances in the film "preposterous."

In the specific case of *Timeline*, there is the further issue of characterization and gender inequality. If the audience digs further into the film adaptation, they will discover that not only are two female characters missing entirely, but a third is switched from female to male in the translation to the big screen—ITC aide Gomez. The two remaining female characters of the film, medieval noblewoman Claire and graduate student Kate, share their names and little else with the strong, independent characters of the novel. The novel version of Claire is the consummate Trickster, fluidly manipulating both the men around her and the situation at hand as she plays to win the complex political game of her era. Claire is therefore a reasonable representation of the standard heroine of the Middle English romance; as Jane Tolmie (2006, p. 146) explains the trope, she is "forceful and decisive; they act with aplomb and shape their own lives in impressive ways." The novel's Kate is intelligent as well as athletic, loyal, independent, and infinitely resourceful. She is not only able to extricate herself from deadly situations but plays an active and pivotal role in rescuing her friends. In sharp contrast, in the film both women are fairy tale damsels in distress, with Claire relegated to the secondary role of sister of one of the noblemen and painted as merely a political pawn to be constantly threatened and rescued. As a specialist in architectural archaeology, the Kate of the novel plays a pivotal role in the team's safe passage through the 14th century version of structures that the team previously only knew as ruins. However, she is demoted in both agency and importance in the film, and the importance of her journey back in time is not in discovering her own strength but rather in relenting to the romantic advances of one of her colleagues.

While Lady Claire is clearly not a scientific character, the large-scale changes in her character in the film adaptation are indicative of shifts seen in Kate as well. In the novel, Lady Claire is a young 14th century widow seeking to inherit her late husband's estate. In public, she protests being forced to marry Sir Guy de Malegant by her guardian, the English lord Sir Oliver, while in private, she manipulates Malegant for her own purposes in an elaborate sexual chess game while simultaneously playing several other characters against Oliver. Claire is central among the "gray" characters in the novel; while her central concern is clearly only herself, and her loyalties shift as quickly as her bed partners, she is not outwardly cruel and uses her influence to save the archaeologists as often as they rescue her. In the novel, Claire, disguised as a boy, saves Chris from being found out by soldiers soon after he arrives into the past, while in the film, it is Marek who is saved,

setting up their eventual romance. Entranced by the beautiful Claire and her freely offered caresses, the novel version of Chris bumbles his way through the English court, ignorant of the customs of the day, and finds himself challenged to a joust by Malegant. Marek, the expert in chivalric customs and medieval weapons, comes to Chris's aid, and Marek finds himself on Claire's radar as someone who can potentially be manipulated by "What persuasion is in my command"—her sexuality (Crichton, 2003, p. 344). After the battle between the forces of Oliver and the French noble, Arnault, in which Claire is safely behind the French lines and does not need rescuing by anyone, Marek escorts her home to England, and they marry. His decision is motivated by a personal desire to live within the age that he had dedicated his life to understanding, not specifically because of Lady Claire.

The novel's version of Claire codes well with the heroine of the Middle English romance, as well as the medievalist tropes common in modern fantasy novels. Jane Tolmie describes the heroine of the former as having the ability to wed and/or bed the man she desires and "inherit what is rightfully theirs" while the latter is "at their best when rising above external conditions that are against them in gender-based ways. They dress up as men to escape restraints on their freedom" (2006, pp. 146-8). It should be noted that Claire's cross-dressing not only aligns with modern Medievalism, but also echoes characters in Scandinavian sagas (Tolmie 2006, p. 147).

In the film, Claire loses much of her agency as well as her moral ambivalence, becoming simply the sister of the French noble Arnault. While she still exudes bravado, she lacks the actions to back it up, as she is captured by the English and continuously rescued by Marek, who is clearly taken with the damsel in distress from the start. Claire predictably falls in love with Marek, but their relationship appears star-crossed; according to the historical record, it was her death at Oliver's hands that turned the battle of La Roque and rallied the French troops to defeat the English. Marek ultimately saves Claire when she is captured yet again by Oliver's forces and aids the French in defeating the English. He makes the decision to remain in the past specifically because of Claire, his fairy tale princess. Kevin Carr (2003) protests that Marek's and Claire's romance is "totally predictable yet poorly constructed" and "feels like it came out of a Silhouette romance novel rather that a of science fiction best seller." Josh Vasquez of *Slant Magazine* likewise criticizes Marek's relationship with Claire as "a barely sketched and dishonestly sentimental love story" (2003). All of the nuances of the Middle English romance and its modern Medievalist adaptation have been lost.

While the changes in the background and character of Claire and the gender shift in the ITC aide Gomez, as well as the omission of lawyer Diane Kramer and linguist Elsie Kastner in the film adaptation, are worthy of note, it is the depiction of the main female scientist, Kate Erickson, that will be the main focus of this analysis.

Stereotypical Depictions of Female Scientists: *Jurassic Park*'s Ellie Sattler as a Crichton Case Study

Michael Crichton has argued that

> All professions look bad in the movies. And there's a good reason for this. Movies don't portray career paths, they conscript interesting life-styles to serve a plot. So, lawyers are all unscrupulous and doctors are all uncaring. Psychiatrists are all crazy, and politicians are all corrupt. All cops are psychopaths, and all businessmen are crooks. (1999, p. 1461)

However, the scientist has arguably suffered the greatest transformation from reality to media depiction. Roslynn Haynes identifies seven common stereotypes of the scientist, many of them negative. These are the Faustian "evil alchemist," the heroic "noble scientist," the absent-minded "foolish scientist," the Frankensteinian "inhuman researcher," the Indiana Jones-like "scientist as adventurer," the "mad, bad, dangerous scientist," and the "helpless scientist" whose work cannot be controlled (2003, p. 244). Eva Flicker similarly summarizes the typical male scientist in media as emanating:

> ...an aura of absent-mindedness, extreme confusion, or even madness. He is more of an outsider in terms of social contacts. He is inattentive to the people

> around him and is uninterested in social trends and fads. He seems socially displaced. He is not a particularly attractive hero with glasses, a work apron, ruffled hair, etc. His enthusiasm for his work could almost be called an obsession. (2003, p. 309)

Interestingly, this trope seems a good fit with Dr. Johnston, especially as depicted in the film, including how his eyeglasses play a central role in the film.

Depictions of female scientists are even more fraught with difficulties. Flicker explains that in media representations, women scientists are "rare, and when they do appear, their roles differ greatly from those of their male colleagues" (2003, p. 308). She describes six stereotypes of women scientists found in feature films (Ibid, pp. 310-15): the old maid who is married to her work until she abandons her science and reclaims her femininity through her love for a man; the male woman—a middling, asexual scientist who relies on her assertiveness to survive in an all-male environment; the naïve expert—ethical, good-looking, but ineffective; the evil plotter—an attractive, self-absorbed vixen with questionable morals who wields her sexuality as a weapon; the daughter/assistant, whose character is defined only through her relationship with a male scientist; and the lonely heroine—a strong, competent, ethical scientist and who can simultaneously be feminine but who still requires a male mentor to be successful.

Given Crichton's notoriously scant characterization, one might be tempted to simply assume that his female scientists cannot be thoroughly analyzed. However, a stereotype does not require much meat on the bones in order to become apparent. Another female scientist of Crichton's is more widely known and can serve as evidence that his female scientists do, indeed, stand up to such scrutiny—*Jurassic Park*'s paleobotanist Ellie Sattler. A comparison between the two lead female scientists of these novels is also proper, for as Daniel Mendelsohn of the *New York Times* notes, "'*Timeline*' is '*Jurassic Park*,' in medieval, rather than Cretaceous, drag" (1999). At its heart, both novels are adventure stories as well as cautionary tales against the secret use of cutting-edge technology for financial gain. There are also similarities between the scientific fields of paleontology and archaeology, especially in their use of painstaking field work to reconstruct history, and Crichton's novels serve as a critique of using the shortcut of extreme technology—cloning in *Jurassic Park*, time travel in *Timeline*—to accomplish both fields. It is also instructional to see how a Crichton female scientist translates from the written page to the big screen.

Ellie Sattler is first introduced to the readers of the novel when she is gawked at by EPA official Bob Morris, much to her thesis advisor Alan Grant's amusement. She is described as "wearing cut-off jeans and a workshirt tied at her midriff. She was twenty-four and darkly tanned. Her blonde hair was pulled back" (Crichton, 2015, p. 36). While she is Grant's junior in both age and academic standing, he treats her as an equal and values her opinion. In fact, the reader is led to believe that she is indeed his peer until well into the novel, as she is erroneously referred to as Dr. Sattler by several characters. But while Grant treats her with respect, her gender becomes an issue worthy of note, in a largely negative way, as her introduction suggests above. For example, when Gennaro, the lawyer for the project, first meets Ellie, he notes with surprise "You're a woman," to which Ellie offers "These things happen" (Ibid, p. 69). Mathematician Ian Malcolm is open and unapologetic in his sexual harassment of her. For example, when they first meet, Ellie comments that Ian's black clothes appear to be a surprising choice for warm, humid weather. Ian replies with a condescending observation—"You're extremely pretty, Dr. Sattler.... I could look at your legs all day"—before lecturing on the physics of blackbody radiation (Ibid, p. 80).

As previously noted of Crichton's characters, while descriptions of Ellie and insights into her psyche are certainly perfunctory, her scientific knowledge of paleobotany plays at least a secondary role in the plot. As in the film version, she notes that ingestion of poisonous plants is behind a cyclical sickness of herbivore dinosaurs. Additionally, she is the one who deduces where the raptors may be nesting, an element left out of the film. However, as Ray Scherrer (2015) argues, the novel version of Sattler "doesn't really do all that much, spending most of the time in the main compound lis-

tening to Malcolm's philosophizing against Hammond. It's not until the raptors attack that she starts getting involved." Interestingly, this involvement centers on her being used as bait to distract the velociraptors while Alan Grant tries to restore the power. In comparison, the Ellie of the film is the one to make the perilous journey to the power shed to restart the power grid. Scherrer also points out that in the film, Ellie "is much closer to Alan Grant in age, making her more of an equal in knowledge of prehistoric life and also adding some romantic tension" (Ibid).

One of the most interesting changes in Ellie's character in the leap from the novel to the big screen is precisely her relationship with her mentor, Alan Grant. In the novel, there is no romantic tension between the two. In fact, when the child Tim asks the widower Grant if he is "with Dr. Sattler," Grant responds "No. She's my student," demonstrating a clear ethical line between the professor/student bond and a sexual relationship. Tim does not understand this and further presses if Grant plans on marrying Sattler. Grant explains, "No, she's marrying some nice doctor in Chicago sometime next year" (Crichton, 2015, p. 262). Given Crichton's famed lack of character development, it is interesting that he felt the need to include this exchange in the novel. In the 1992 screenplay rewrite by Maria Scotch Marmo, Ellie Sattler is in her late 20s, has her Ph.D., and discomforts Grant with sexual innuendo and unwanted physical contact, such as grabbing his hand when scared and sleeping with her head on his shoulder. By the end of the screenplay, he is willing to give her a needed hug, but there is no evidence that their relationship is destined to grow further. Interestingly, in the screenplay, her scientific background is also given more importance, as she independently discovers a fatal weakness in the genetically engineered dinosaurs that Hammond and his scientists are trying to hide: all of the dinosaurs die within a year or so of age, so they are fed growth hormones in order to give them the appearance of adults. However, it is Alan Grant who correctly surmises that this is caused by the contamination of mosquito DNA in the sequencing.

In the final draft, written by David Koepp (1992), a consensual romantic relationship is established between the two paleontologists from the early scenes; for example, after a discussion about children, an exasperated Ellie says, "It frustrates me so much that I love you, that I need to strangle you right now," before she playfully removes his iconic hat, and they embrace and kiss. The status of their relationship is downplayed in the film; the most unambiguous acknowledgement being an exchange in which the womanizer Malcolm asks, "Dr. Sattler, she's not like, available, is she?" to which Alan asks, "Why?" Malcolm senses Grant's defensiveness of her, and apologizes: "Yeah, I'm sorry, you two are—" to which Grant firmly offers, "Yeah." Nothing more needs to be said between the two men, and Malcolm respects Grant's verbal marking of his territory (Kennedy, Molen & Spielberg, 1993). This receding of her romantic relationship with Grant into the background paints Ellie as a scientist in her own right, albeit a far less important scientist to the plot than her male colleagues.

The novel's Ellie is perhaps best described as a combination of Flicker's naïve expert and daughter/assistant. She is clearly the junior scientist, and it is her professional relationship with Grant that gives her some authority since she lacks the credential of PhD. Although she is in a romantic relationship with Grant in the film, the fact that this relationship does not take center stage—it does not define her as a character—and that she is not only closer in age to Grant, but apparently has an academic reputation of her own as an expert in her field, elevates her to the lonely heroine trope, a stereotype that is perhaps even better personified by *Contact*'s Ellie Arroway (Flicker, 2003, p. 315). Flicker describes such a character as:

> possibly the most competent scientist in her special area. She is a modern, emancipated woman. She finds it natural to move within a male environment, and accordingly she has also appropriated some male traits. Her greatest (or only) interest is in her scientific research.... A likeable, good-looking and unrealistically young woman fits this role as well. (Ibid, p. 315)

This type of character also has a "matter of factness of her sexual experience and self-determination. Sexual

relations and scientific work are not mutually exclusive—as long as she keeps her priorities straight" (Ibid, p. 315). However, as in all female scientist tropes, the "lonely heroine is also lacking the power of the male scientist"; the audience sees this in the film version of Sattler, where she obviously takes a back seat professionally to Grant (Ibid, p. 315). It is his dig site, and he claims the responsibility of explaining their technique to visitors. Alan Grant is clearly the center of attention in the film while Ellie Sattler is relegated to the role of secondary scientist—perhaps even tertiary, if one considers Ian Malcom. In the case of *Timeline*'s Kate Erickson (Ericson in the film), the marginalization of the female scientist is even starker, as not only is she relegated to a secondary role, but her scientific knowledge and rational mindset are eventually sacrificed in the name of romance.

From Archaeologist to Damsel in Distress: The Diminution of Kate Erickson

Kevin McGeough notes that there has been a "gradual transformation of the popular cinematic conception of the archaeologist from the older, weak victim to the younger, strong heroic figure. With this transformation has come a sexualization of cinematic archaeologists," the primary example being Indiana Jones (2006, p. 180). He further argues that female archaeologists tend to be portrayed in film as either "privileged women with a love of adventure, who happen to be extraordinarily beautiful, yet are unaware of or unwilling to acknowledge the male gaze," or "junior level scholars (perhaps graduate students or librarians), who, when they take off their glasses and let down their hair, become remarkably beautiful" (Ibid, pp. 181-2). But what happens when the female archaeologist is neither myopic nor classically beautiful? Such is the case with *Timeline*'s Katherine "Kate" Erickson. In order to carefully analyze the (de)evolution of her character, it is necessary to consider three significant differences between the Kate of the novel, an intermediate script, and the film: how she and Chris become romantically involved, Kate's reaction to death and killing, and her agency as an archaeologist.

"Avid climber" Kate is first introduced in the novel suspended from the ceiling of Castelgard's chapel, taking careful notes on the structure (Crichton, 2003, pp. 67-8). Initially described as "ash-blond, blue-eyed, and darkly tanned," Crichton adds that she "was not a pretty girl—as her mother, a homecoming queen at UC, had so often told her—but she had a fresh, all-American quality that men found attractive" (Ibid, p. 68). The men did find her attractive in the novel, as it is revealed that several members of the team, including Marek, had "made a pass early on" (Ibid, p. 88). After being unceremoniously dumped by his British girlfriend, noted womanizer and fellow graduate student Chris Hughes turns his sights on Kate, who instantly rebuffs his advances. However, as several reviewers have criticized, a romance nonetheless develops between the couple over the course of the novel. Film reviewers also panned the relationship as not well motivated. For example, Kevin Carr (2003) refers to Chris and Kate's relationship as "a rickety romance… that has no chemistry or reason" while Guylaine Cadorette of *Hollywood.com* complains that their relationship "feels as platonic as the one he has with his father" (2003). In the film, Chris "Johnston" is indeed the professor's son, has no interest in archaeology, and normally only visits his father for a few weeks each year. The professor correctly surmises that his son remains at the dig due to an infatuation with Kate. When Chris brings Kate a beer at the site one night, Kate politely makes small talk, and, when Chris offers that he is "not really all that interested in the past," there is an uncomfortable moment when he stares at her like a lovesick puppy dog and she responds by uneasily looking away (Donner, Van Wyck & Donner, 2003).

In an intermediate version of the screenplay written by George Nolfi, based on a previous screenplay penned by Jeff Maguire, the relationship between Chris and Kate is quite different from that in the novel and the film. The audience first meets the characters in bed, after a night of passion. Kate is a graduate student completing her PhD under the supervision of the professor, here Chris's stepfather. Chris is an undergraduate on the dig, making Kate his supervisor, and introducing a relationship that is stressed not only by the difference in age but also several shades of conflict of interest. While Chris is comfortable with their relationship, Kate breaks it off. She is mortified when her

Heroine or Damsel in Distress, continued

friend and colleague Marek not only knows about the relationship but is also convinced that the Professor will discover it before long (Nolfi, 2000, pp. 3-6).

In the novel, Chris is a notorious womanizer who makes a less than stellar first impression on ITC's vice president Gordon. Understanding well what the team will be up against in 14th century France, Gordon swiftly sizes up Johnston's colleagues, noting that Marek "Looked strong. And the woman [Kate] wasn't bad, either. Good muscle tone in her arms, calluses on her hands. Competent manner. So she might hold up under pressure" (Crichton, 2003, p. 123). However, when it comes to Chris, "the good-looking kid would be useless" (Ibid, p. 123). In Nolfi's screenplay, the archaeologists confer amongst themselves as to who should travel into the past. Kate is wary but agrees to go out of loyalty to the professor, but her former lover, Chris, is overly protective and does not want her to go. Marek counters that Kate's participation is critical, due to her expertise in architecture. In his words, "She's the only one of us who will be able to find her way around if we go into Castelgard or the monastery. We need what she knows" (Nolfi, 2000, p. 33). ITC president Doniger initially does not want Chris to go, correctly surmising that he "has no particular skills… and, frankly, he seems a little immature" (Ibid, p. 35). In the film, ITC security head Gordon explains that he does not need Chris or "Miss Erickson," but Marek is vital because he knows the layout of the site. Kate protests, informing Gordon that "Nobody knows the layout like I do. I'm going" (Donner, Van Wyck & Donner, 2003).

In the intermediate screenplay and the film, the group's transition into the past unmistakably marks a change in Chris and Kate's relationship, and simultaneously signifies her regression from an independent modern woman into a damsel in distress. In the 2000 screenplay, as the machine's countdown progresses, Chris professes his forbidden love for his former girlfriend Kate, who tears up and returns his affection, signaling that she has succumbed to his pressure to maintain their relationship. In the film, the once rebuked Chris clasps Kate's hand as the machine powers up, giving her comfort during the vividly painful process, foreshadowing that Kate needs Chris in order to survive in the past.

In Crichton's novel, Chris is initially as weak as Kate is strong and independent; not only is he easily manipulated by his British girlfriend, but, upon arriving in the 14th century, he panics and is only saved from capture by the clever thinking of Lady Claire. Indeed, Kate only begins to view Chris as anything other than a liability—a guy "who threw fits if he was served dried cépe mushrooms instead of fresh ones in his morning omelette"—more than two-thirds of the way through the novel, when he does not complain about the pain after being hit by an arrow (Crichton, 2003, p. 332). Subsequently, after Chris saves Kate from a bandit, she realizes that she had never noticed before "that he was quite an attractive man," but dismisses the thought as mere gratitude (Ibid, p. 403). However, after this revelation, she begins to follow Chris, quite literally, rather than being independent, when, for example, asking him which way they should travel at a crossroads. Finally, after saving her from a crazed knight at the entrance to the forest chapel, she literally calls him "My hero," a statement only half made in jest (Ibid, p. 324). Their descent into a dark cavern and tunnel and emergence into the fortress La Roque signifies the death of both Kate the independent woman and Chris the court jester, and the birth, from the belly of the beast, in Joseph Campbell terms, of Chris as the stereotypical medieval knight and hero and Kate as a damsel in distress. As previously noted, this latter fairy tale trope stands in stark contrast with the active and forceful heroine of the Middle English romance.

Chris's evolution from a self-centered womanizer in the novel or simply the boss's young son in the film into a man worthy of being a romantic interest for Kate is a necessary fulfillment of an important romantic trope. Because Kate is what Lorna Jowett describes as a "good girl," being "on the side of 'right' in the fight against 'evil,'" she, like Ellie Sattler before her, "must have a good man, participating in compulsory heterosexuality and romance" (2005, pp. 44-5). In the case of *Jurassic Park*, Alan Grant is basically a "good man" from the beginning—intelligent, protective, selfless, and heroic. His only obvious flaw in the film is his initial dislike for children, something that is conveniently ad-

dressed as the film progresses; by the end of the film, he has not only saved the two children, Lex and Tim, but has also come to feel genuine affection for them. In *Timeline*, Chris begins both the novel and film lacking in heroic traits, and his character arc is concerned with his growth as a hero. As his agency waxes, Kate's wanes in nearly equal proportion.

As an example, the novel contains a clear signifier of how the journey into the past becomes a line of demarcation for Kate and presages her fall from power into relative helplessness. It is explained to Kate that not only do women have to wear period-appropriate long dresses on the mission—something that not only feminizes them but can also become a life-threatening impediment in times of fleeing or fighting—they have to don long wigs as well, because "Short hair on a woman is a sign of disgrace, or heresy." Kate muses that the wig makes her look like "a stranger. She looked younger, softer. Weaker" (Crichton, 2003, p. 165). This transition parallels the standard narrative of the tomboy, which Barbara Creed (1995, p. 94) describes as the change from engaging in "active sports" to a willingness to "don feminine clothes," grow out her hair, and embrace "passive, feminine conformity." In the novel, after escaping from Castelgard with Marek and Chris, Kate not only sheds her hated wig but also shears her hair shorter with a knife, binds her chest, and passes for a man, a ruse meant to throw off the soldiers who have been commanded to search for two men and a woman. This cross-dressing parallels common themes in both Medieval texts and modern Medievalisms. However, this deception on Kate's part nearly leads to a sexual assault, when Arnault notes that "this fair boy touches my heart. I will entertain him in my tent tonight" (Ibid, p. 387). It is only the intercession of Claire that saves her. In the film, Kate already has long, brown hair, a formulaic feminizing trait in sharp contrast to her more masculine haircut in the novel, and does not cut it, as the gender-bending ruse is omitted.

The status of Kate and Chris's relationship in the end is also depicted differently in the three versions. The novel concludes some months after the rescue of the professor, and Kate is seven months pregnant with Chris's baby, signifying her adoption of a stereotypical woman's role. The professor's team is in England, on a pilgrimage to see Marek and Claire's final resting place in the castle she inherited from her first husband. The novel ends with the characters simply expressing how much they miss their friend. In the screenplay, the group looks at a stone marker for Marek and Claire in a church a half a mile from their French dig site, and there is an abbreviated discussion about the couple before attention is turned to Kate and Chris, who nervously try to explain their illicit liaison to an amused professor. In the film, Kate and Chris join the professor and team physicist David Stern at the fully excavated and cleaned sarcophagus and realize it is Marek and Claire depicted on the lid. As the professor reads the sentimental inscription, Kate and Chris snuggle, and Kate kisses Chris's shoulder as they lovingly look into each other's eyes. The camera focuses on their clasped hands before fading to the credits with a view of the landscape and sky. Linda Bingham (2006) argues that the quest to rescue the professor leads to the maturation of both Chris and Marek in the same way that the knight develops into a hero in a traditional chivalric romance. For example, she draws parallels between Chris's personal and martial growth in the novel and Kate's increasing openness to considering Chris as a potential object of affection as similar to the basic plotline of a medieval romance. She notes that Chris's initially "'unknightly' behavior" in the medieval era mirrors his "immature behavior at the archaeological site in the present" and traces his growth as a character as paralleling that of Gawain. Thus, she argues, the marriages of the two "knights" (Chris and Marek) at the end of the novel are fitting. However, it comes at the expense of two strong female characters, who are softened, feminized, and "tamed" in the process.

A second point of deviation from the novel to the intermediate script and the film is Kate's reaction to death and killing. The grisly beheading of ITC aide Gomez upon their arrival to the 14th century affects Chris and Kate differently. In the novel, Chris is unnerved and runs away while Kate, although repulsed by the corpse, has the presence to remove Gomez's wig to find the spare time travel marker that might be their

only way home. In the screenplay, Kate is horrified but composes herself quickly. In contrast, in the film, Kate is traumatized when Gomez is killed and turns away in horror when she sees his dead body. She is disturbed when the others rifle through the dead man's clothes looking for his marker. Another major difference is her reaction to killing in self-defense. In the film, she is visibly traumatized by having to kill a soldier guarding her friends, stabbing him with an arrow. She freezes at the sight of his corpse, and Chris has to lead her to safety. As they hide in a small building, Kate sits on the floor against a wall, staring at the blood on her hand while Chris spoons up behind her, his arms protectively enveloping her. He kisses her hand and then her forehead. It is interesting that, in the 2000 screenplay, she does not kill anyone in this escape nor does she in the novel, but, in the novel, she kills attacking soldiers on other occasions without hesitation in order to save her life and the lives of her friends. This significant difference is consistent with Kate's greater agency and self-reliance in the novel as compared to the film.

This alteration in Kate's emotional reaction to death and danger (a feminine trope), as well as a general shift from masculine activity to feminine passivity, signify Kate's intentional transformation from a tough *woman* to a good *girl*, to use Jowett's term. Indeed, according to Sherrie Inness, "the tight emotional and physical control that has been traditionally associated with men" is one of the hallmarks of a tough woman (1998, p. 13). This emphasis on "emotional elements, love affairs, and feelings" is also central to the common stereotypes of the female scientist, signifying that the female scientist does "not represent the rational scientific system of their male colleagues. They are therefore taken less seriously as 'scientists'" (Flicker, 2003, p. 316). It is important to note that this change in Kate's control over her emotions is concomitant with the overall shift in the character as a love interest for the increasingly heroic Chris. This reinforces the standard stereotype of the good girl as the embodiment of the message that "conformity to weakness, passivity, and self-sacrifice will encourage male love/approval" (Coppock, Haydon & Richter, 1995, p. 110).

Kate's literal physical ability is also decreased in the film as compared to the novel, another example of reducing or downplaying typically masculine traits, although it is not completely eliminated. One particularly important moment of action, which speaks directly to her climbing skills, centers on her escape from an upper floor room in which Oliver's men have the group jailed. In the novel and screenplay, they are in a stone tower six stories up, and Kate has to use her rock-climbing skills to escape out one window, climb in through another, and open the door to their temporary prison. In the novel, she tells herself it is "just a free solo" and has little difficulty with the task (Crichton, 2003, p. 292). In the screenplay, her skills have only been previously tested "On a gym wall, with a safety line" (Nolfi, 2000, p. 55). Chris is a nervous wreck as she prepares to work her way around the tower and climb through another window, and she stops him from speaking, afraid that he will "say something that'll make me lose my nerve" (Ibid, p. 56). She completes this maneuver without any help. However, several scenes later, Johnston, Gordon, Kate, and Chris are cornered by soldiers as Marek has gone off alone to rescue Claire. They are on a portcullis that is buckling under their weight, and Kate has to decide whether a staircase or one of two hallways leads to the library where their supplies have been stored. She is paralyzed with fear and indecision until Chris calmly urges her on: "You know this place. You do. What does your gut tell you to do?" (Ibid, p. 63). Fortunately for them all, she makes the right choice.

In the film, she climbs out through a thatched roof and maneuvers across the roofline in moves that rely on her rock-climbing skills, which she simply mentions are better than the others. It is also noted that the roof will not hold the weight of any of her colleagues. As she prepares to push through the thatch, she stops and gives Chris an enthusiastic kiss, not only signaling her final submission to his advances, but also noting the necessity of drawing strength from Chris rather than simply from within herself. As she climbs over the peak of the roof, she begins to slide and is only stopped from falling off the roof when Chris sticks his hand out through the thatch and grabs her by the wrist, saving her. Kate's climbing ability is notably important in the

novel in two further scenes that have no counterparts in the film. In both, she tries to escape from Oliver's forces by climbing through the ceiling's scaffolding, attempting to move from support beam to support beam, gauging which will support her weight but not that of her larger male attackers. She is clearly applying her scientific knowledge of the laws of physics and their application to architecture as well as her specific archaeological experience at the site.

Finally, Kate's role in discovering the all-important secret passage into the stronghold La Roque has an interesting evolution from novel to intermediate screenplay to film. The discovery of the tunnel is a convoluted affair in the novel, requiring input from both the professor and Kate, as well as a great deal of luck. As previously noted, Chris has to rescue Kate from a crazed knight who guards the entrance in the forest chapel, thus acting as Gawain to the Green Knight. It is now Kate's turn to succumb to panic when she and Chris become separated in a dark cavern, a reversal of their roles when they first arrived in the 14th century, and, in the end, it is Chris who realizes that the tunnel exits behind a fireplace in La Roque. In the 2000 screenplay, Kate is lauded by the professor in the present for her discovery of the remains of the tunnel. However, in the past, she has great difficulty translating her discovery in the ruins into locating the extant secret passage in the actual monastery, and only finds the courage and apparent intellectual clarity to analyze diagrams and drawings provided by the monks after squeezing Chris's hand.

In the film, she is confident that the stairs she is excavating will lead her to the tunnel, but she is wrong. She accidentally finds the walled-up entrance to the tunnel in the present beneath where she was working when there is a cave-in at the site but does not recognize it as such until she encounters it again. In fact, in the 14th century, she convinces a reluctant Chris to follow her to the monastery to look for the tunnel that she is sure exists—"You've got to trust me"—but of which he is skeptical (Donner, Van Wyck & Donner, 2003). While she is able to recognize the place where she had been digging in the present, it takes her a while to put the pieces together and break through the stone relief to find the tunnel. In what later appears to be an act of hubris, she demands that the monks go tell Arnault that the tunnel has been found before she and Chris check it out, and they discover it is a dead end just as Arnault arrives. Kate is devastated, claiming that she has "let everybody down" as she cries into Chris's embrace (Ibid). It is only the action of a man—Marek—that saves the day, as an explosion he causes above their heads opens the blocked exit to the tunnel, and Arnault is able to enter the fortress to fight Oliver.

What should the audience to make of the character of Kate in the end? Her journey in the novel appears to align well with Flicker's stereotype of the old maid:

> There is no doubt about her professional competence, but as a woman she is lacking something... The stereotypical old maid does not have to be all that old—it is much more her style that is old fashioned. In keeping with a successful character development, over the course of the film her deficit will be balanced out. Her femininity will be (re)instated. A man will appear who sets her off in a spin and shows her the ways of love despite her routine rationality. (2003, p. 311)

Flicker goes on to note that such a character "pays the following price: during her transformation into the perfect, attractive, and desirable woman, she loses her professional competence and slips up, making mistakes. According to this model, femininity and intelligence are mutually exclusive characteristics in a woman's film role" (Ibid, p. 311). The audience sees this in the film when Kate appears to have led them to a dead end in the secret tunnel. It is only with the violent explosion caused by Marek—a strong, male character—that the exit is blown clear. Kate also has characteristics in common with the lonely heroine. In particular, Flicker notes that such a character links "rationality with female intuition" and as previously explained "Sexual relations and scientific work are not mutually exclusive—as long as she keeps her priorities straight" (Ibid, p. 315). However, as in all female scientist tropes, the lonely heroine also lack the agency of her male counterparts and must rely

on male colleagues for support, safety, and/or professional recognition. This is most evident in *Timeline* in Kate's search for the tunnel, as noted above. While she follows both her archaeological knowledge of the site and her intuition, she is in constant need of male support, both physically and emotionally. As demonstrated through the examples in this essay, it is true that Kate does retain a higher degree of agency within the novel as compared to the film, but, over the course of the novel, her agency still decreases and is, to a large measure, transferred to the men around her, especially Chris, her love interest.

Gender, Science, and Messages from the Past to the Present

Kevin McGeough claims that film archaeologists are "never interested in preserving an archaeological site. On the contrary, the site presents a significant barrier to the archaeologist's attempt to gain the object of his quest.... Sites are exciting, dangerous, and remote in film, but not themselves the subject of scholarly enquiry" (2006, p. 178). *Timeline* is the exception that proves the rule. The site itself is, indeed, very much a "subject of scholarly enquiry" in the novel and film. However, it becomes far more than an academic exercise, thanks to the intrusion of modern technology and the adventure of time travel. It is also ironic that, in the end, the archaeologists who had so painstakingly and carefully excavated the French site are, in large part, responsible for its partial destruction in the 14th century, as it is the professor's manufacture of explosives under duress for Oliver that causes much of the damage to La Roque. It is also the people, not the site itself, that ultimately play the central role in this work. As Mark Hall notes of the film version of *Timeline*, "Although it portrays archaeology as very much the handmaiden of history it nevertheless recognizes that the driving motivation for many archaeologists is to understand people—who they were, what they did and how both influence who we are and what we do" (2004, p. 171).

However, as the audience has seen, these characters—in particular, the female ones—succumb, like many Crichton characters, to the ills of simple stereotypes. This includes Professor Johnstone as the somewhat bumbling absent-minded professor and ITC mogul Robert Doniger as the evil mad scientist willing to sacrifice human lives in the name of technological advances. Negative depictions of science and scientists are important, as they can both color and reinforce our views of the scientific endeavor overall, from distrusting vaccination recommendations and genetically modified organisms to dissuading young people, especially women, from entering scientific majors and careers (Weingart, Mulh, & Pansegrau, 2003, p. 281; Chimba & Kitzinger, 2010, p. 609; Steinke, 2013, p. 2).

As Jon Turney warns, "fictional representations [of science] matter" (1998, p. 13), but I would argue that fictional depictions of female scientists matter more, as they speak to both stereotypes of scientists and women. Eva Flicker argues that depictions of women scientists are important because the common "portrayal of women scientists that is oriented on their deficiency—either not a 'real' woman or not a 'proper' scientist—contributes to the formation of myths about women scientists' lack of competence and therefore also women's experience of social discrimination" (Ibid, pp. 316-7). Jocelyn Steinke adds that

> Images of female scientists and engineers presented in popular films are symbolic models that serve as sources of information about women, gender roles, and female scientists and engineers. As symbolic models, these images have the potential to shape adolescent girls' perception of scientists and engineers and their interest in scientific and engineering careers. (2005, p. 52)

In response, generating "positive portrayals of female scientists has [sic] been identified as a critical strategy for increasing the participation of women" (Steinke, 2013, p. 2). However, audiences should not consider this a case of sacrificing entertainment value for the sake of providing positive role models for the next generation of scientists. As the positive depictions of female scientists in such blockbusters as *Hidden Figures* (2016), *Contact* (1997), and *Black Panther* (2018) prove, audiences are certainly receptive to the inclu-

sion of positive depictions of women in science.

In the case of *Timeline*, the Kate Erickson's descent from self-reliant, self-assured scientist and heroine to damsel in distress is therefore not only significant but also troubling and sends a decidedly negative message to viewers: she is only complete as a woman once she succumbs to Chris's advances, with the sacrifice of her scientific prowess and power. That is, one might pessimistically reflect, if the audience was meant to believe that she truly had any such power in the first place. Perhaps the widespread negative reception of the film reflects, in part, a rejection of such doubly off-putting tropes.

Heroine or Damsel in Distress, continued

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JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

Insignificance and cosmic solitude: Evolution of two ideas in science fiction

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Abstract: Insignificance and cosmic solitude are found with great frequency in science fiction, philosophy, art, scientific dissemination and in the collective imagination. The origin of cosmic insignificance dates back to the dawn of modernity, with the emergence of scientific rationality and heliocentrism. Cosmic solitude is typical of the 20th century and it emerges in the context of the search for extraterrestrial intelligence and the terrible possibility that humanity is on the brink of self-destruction. This article will analyze the origin, development and some variations of these two important ideas.

Keywords: heliocentrism, SETI, popular science, Carl Sagan, Arthur C. Clarke, cosmic insignificance, cosmic solitude

A very small stage in a vast cosmic arena

One of the most famous texts about cosmic insignificance is inspired by a photograph not taken by a human being. In 1990, and from beyond the orbit of Neptune, the space probe *Voyager 1* took an image in which the Earth appears as a small particle. It was dubbed "A Pale Blue Dot." Later, Carl Sagan wrote a homonymous book in which he explains that this small and insignificant dot encloses absolutely everything that humanity is and has been, all its creations, its miseries and its glories. For Sagan, cosmic insignificance is an irrefutable fact and is as evident as this photograph. Nevertheless, the insignificance does not discredit our achievements but rather it should make us aware of our ethical and ecological duties: "To me, it underscores our responsibility to deal more kindly with one another, and to preserve and cherish the pale blue dot, the only home we've ever known." (Sagan, 1997, p. 7). For Sagan, cosmic insignificance does not imply any existential anguish. The problems of human beings are minuscule and from a calm contemplation of this condition, one can begin to construct a future where we overcome our differences.

On the one hand, we can define cosmic insignificance as a feeling of irrelevance in the face of the infinity of the universe. On the other hand, cosmic solitude is understood as the trepidation that emerges from the possibility that humanity is the only intelligent civilization. Today, both motifs are used profusely in philosophy, science fiction, art, scientific dissemination, and in the collective imagination. Insignificance and cosmic solitude are such everyday subjects that almost every contemporary piece about the search for life or extraterrestrial intelligence begins with the question "Are we alone in the universe?". It's hard to notice that these ideas have not always been around; on the contrary, they have a precise beginning and a development. Unlike the loneliness that we all can experience throughout the course of our lives, insignificance and cosmic solitude are not typical of every era. On the contrary, they are constructions that have been possible thanks to scientific and technological developments (such as the heliocentric model, radio telescopes and the modern search for extraterrestrial intelligence) and complex cultural processes (involving philosophy, popular science, and literature). The purpose of this article is to construct a brief history of how these two ideas have emerged and how they have developed in science fiction and in a wide variety of discourses. First, we will analyze cosmic insignificance, since it is the oldest and also lays the foundations to be able to understand the other topic. Later, we will analyze how, due to the great interest that arose around Mars in the 19th century, the idea of cosmic solitude began to take shape. Finally, the contributions that various authors made to this topic will be analyzed, from those such as Russell and Huidobro who see loneliness as a result of scientific discoveries, to Clarke and Sagan who see the search for extraterrestrial intelligence as a way to overcome loneliness.

The age of insignificance

Pre-Socratic philosophers had a wide variety of conc-

eptions about the Earth and the universe that may seem exotic nowadays. For example, according to Thales of Milet, who inherited the vision of the Egyptians, our planet floats on water (Pecker, 2001, p. 43); for Anaximander, the Earth is a cylinder (Pecker, 2001, p. 46); and for Petro, there are 183 worlds organized in the form of an equilateral triangle (Pecker, 2001, p. 47). Later, Plato and Aristotle would formulate the arguments that would allow all this multitude of ideas to be left aside and the geocentric model would be implemented. It is worth mentioning that there were other visions about the universe, but the most widespread, commented on and accepted during Antiquity and the Middle Ages was, without a doubt, geocentrism.

Geocentrism is not only a scientific model, but also a philosophical one. Of course, its success has to do with its ability to explain certain natural phenomena, but also it has to do with all the philosophical and mythical ideas that it entails. In their writings, Plato and Aristotle created a universe that is ruled by divinity, harmony and perfection, and where humankind is the focal point. In this respect, Pecker writes: "The Greeks regarded the Earth as a sacred object and geocentrism was a way for Greek culture to assert its theologically driven conception of the Earth" (Pecker, 2001, p. 88).

In *Timaeus*, Plato compares the universe to a living being, characterized as perfect, unique and incorruptible. This idea would have a great influence on the thoughts of the Middle Ages. In the same vein, Aristotle wrote about the unmoved mover, the divine force located in the final sphere of the sky that moves all other celestial bodies; this idea would be redrawn by the Christian religion and scholastic philosophy. For St. Thomas Aquinas, the Christian god is in the highest sphere and it is because of him that the other spheres get their strength to revolve.

The best example of the importance of the geocentric model to the medieval religious vision is *Divine Comedy* by Dante. In accordance with Dante, there are nine spheres of heaven while underground the Earth there are just as many corresponding to hell. The circles are not merely a physical explanation of the universe, but rather they are mixed with an eschatological idea of existence. The universe is designed to allow travel and give meaning to life through sin and redemption.

The arrival of heliocentrism in the 16th and 17th centuries would lead to a series of profound transformations that would forever change the way the universe was conceived. Heliocentrism would open the floodgates to the influx of scientific and philosophical questions that would be incompatible with religiosity of the time. The discovery that the planets' orbits are not circular but rather elliptical would call into question the idea of celestial perfection. In addition, the universe now seemed to extend infinitely, instead of being reduced to nine spheres. Meanwhile, the Earth would be dethroned from its central position and would become one of the planets that revolve around the sun. Finally, the possibility opens up that there could be other "men" or intelligent beings on other planets.

Martin Luther's reaction towards Nicolaus Copernicus is an example of the attitude that Christianity had against heliocentrism: "This fool [Copernicus] wishes to reverse the entire science of astronomy; but sacred Scripture tells us that Joshua commanded the sun to stand still, and not the Earth." (as cited by Russell, 1935, p. 23). The Spanish Inquisition, Lutherans and Calvinists, classified heliocentrism as an absurdity and heresy (Rossen, 1995, pp. 161 and 217). It was practically impossible for Christian doctrine to adapt to the new conception of the universe:

> The doctrines of the Incarnation and the Atonement could not appear probable if Man were not the most important of created beings. Now there is nothing in the Copernican astronomy to prove that we are less important than we naturally suppose ourselves to be, but the dethronement of our planet from its central position suggests to the imagination a similar dethronement of its inhabitants (Russell, 1935, pp. 23-24).

Even though the discoveries of Copernicus, Kepler and Galileo were severely attacked by Christianity, there was no turning back. At the same time the Earth ceased to be the center of the universe, many philosophical, religious or mythological ideas that were related would also enter into crisis. In this context, the

cosmic insignificance became one of the central ideas of scientists, writers and philosophers. It is not that this idea did not exist in Antiquity, but that with the new and vast universe of heliocentrism, cosmic insignificance became the inescapable way of understanding the relationship between the human being and the cosmos. We can identify three ways in which cosmic insignificance has been addressed: 1) A terrifying experience that causes a feeling of devastation because the human being seems null and meaningless; 2) Something incredible that arouses curiosity and sense of wonder; 3) A frame of reference that allows us to put in perspective the importance of human affairs in a different way. Below are some examples of these three ways of looking at cosmic insignificance.

A terrifying experience

As soon as scientific rationalism emerged, thinkers saw this new paradigm as something terrifying that threatened religion and the unity of the ancient cosmos. The crisis of the mythical-religious discourse linked to geocentrism would first be perceived by those who were knowledgeable about scientific matters. One of those individuals was John Donne, a poet that was also an avid reader of astronomical discoveries of his time: "it is agreed that he read Kepler's book about a nova in 1606 and Galileo's about his discoveries through the telescope in 1610, as soon as they came out" (Empson, 1995, p. 84). In his poem "An Anatomy of the World" (1611), the author leaves evidence of grief due to the rupture of the former paradigm of the universe:

> And new philosophy calls all in doubt,
>
> The element of fire is quite put out,
>
> The sun is lost, and th'earth, and no man's wit
>
> Can well direct him where to look for it.
>
> And freely men confess that this world's spent,
>
> When in the planets and the firmament
>
> They seek so many new; they see that this
>
> Is crumbled out again to his atomies
>
> (Donne, 1990, p. 212).

Donne sings in a tone of elegy to all these notions of the cosmos that, since the new astronomical discoveries, now seemed invalid. The human soul, represented in this poem by the fire element, is threatened by the vision of new scientific rationalism. Donne regrets that the union that existed between humankind and the cosmos is being replaced by the fragmented world of the cold and incomprehensible atoms.

Like Donne, Blaise Pascal is an example of a man who suffers from the mythological and religious crisis that produced heliocentrism. He was a notable mathematician and an inventor who made numerous contributions in various fields of knowledge, among which are "calculating machines, the very first public transportation system, probability theory, decision theory, and much of the mathematics of risk management." (Connor, 2009, p. 20). One night in 1654, Pascal had a mystic vision that changed him forever. After this moment, he converted to Jansenism and drew up a plan to write his "Apology for the Christian Religion." He never finished this work, but fragments of it would be edited and published after his death under the title of *Thoughts* (1670). In it, Pascal describes humans as beings without direction, lost in the universe:

> When I consider the short duration of my life, swallowed up in the eternity before and after, the little space which I fill and even can see, engulfed in the infinite immensity of spaces of which I am ignorant and which know me not, I am frightened and am astonished (Pascal, 2014, n. 50).

The paradigm of heliocentrism created a universe infinitely larger than that of the nine spheres. This is what Pascal captured in his vision: cosmic insignificance is terrifying and human beings, incapable of creating a moral or a true knowledge of reality, must resort to god. Without divine comfort, they will fall into existential nausea. Despite having been a genial scientist, Pascal's thoughts are dominated by theological sentiment and they are the result of a man overwhelmed by the new scientific paradigm.

Amazement and wonder

The astronomer Christiaan Huygens explains in The

Cosmotheoros (1698) that he will write about "the Extent of that Universe of which our Earth is but an inconsiderable point." (Huygens, 1722, p. 4). Unlike what happens with Pascal, the cosmic insignificance does not terrify Huygens, perhaps due to his firm conviction that scientific knowledge does not contradict the sacred writings. Another famous astronomer, John Herschel wrote in a tone similar to that of Huygens. In the introduction to his book, *A Treatise on Astronomy* (1833), he writes:

> After dilating his thoughts to comprehend the grandeur of those ideas his calculations have called up, and exhausting his imagination and the powers of his language to devise simile and metaphors illustrative of the immensity of the scale on which his universe is constructed, he shrinks back to his native sphere; he finds it, in comparison, a mere point (Herschel, 1951, p. 2)

The previous paragraph is one of the most beautiful examples of the feeling of wonder caused by cosmic insignificance. Herschel describes how his scientific intellect and his imagination take delight in thinking about the immensities of the cosmos. This description can be equated with a mystical experience of communion with infinity. Although a great effort is necessary, scientific imagination is capable of freeing human beings from their earthly bonds and showing them the secrets of the universe.

Put in perspective the importance of human affairs

In his wonderful novella *Micromegas* (1752), Voltaire resorts to cosmic insignificance to put the human passions in perspective. In this text, two giants, one from the star Sirius and another from the planet Saturn, visit the Earth. The whole story emphasizes, in a comical tone, that human beings are insignificant. For example, the inhabitant of Sirius, Micromegas, explains that he has visited places where there are beings who could crush the planet Earth with their footsteps, and he is surprised that beings so close to nothing (human beings) are capable of reasoning. The giants take a boat, which in their eyes seems very small, and begin to talk with their crew. They assume that by possessing so little matter, humans live without worry and in a state of perpetual happiness. But the humans reveal that, in reality, they are full of perversions, madness, vices, and wars, before which the aliens are horrified. Then, when visitors ask what the soul is, one of the theologians answers that the truth is in St. Augustine's *Summa Theologica,* and that the whole universe was created for humans, and then: "At this monstrous assertion, our two travelers could not help in rolling upon one another in endeavoring to stifle that inextinguishable laughter [...] and in the midst of all these convulsion, the ship which the Sirian held on his nail, fell into the Saturnian's breeches-pocket." (Voltaire, 1807, p. 145). Laughter and the comic denouement highlight the smallness of human beings. The story is a satire against violence and religious arrogance.

Friedrich Nietzsche is another thinker who uses the motif of cosmic insignificance in order to put something in perspective. As is well known, this philosopher tackles the problem with language, that which will lay the foundations of the linguistic turn of the 20th century. His first observations on the matter are found in the course notes of his philosophy and rhetoric classes, but he develops these intuitions in a much more systematic way in "On Truth and Lies in a Nonmoral Sense" (1873). The first paragraph of this essay reads:

> In some remote corner of the universe that is poured out in countless flickering solar systems, there once was a star on which clever animals invented knowledge. That was the most arrogant and the most untruthful moment in "world history"—yet indeed only a moment. After nature had taken a few breaths, the star froze over and the clever animals had to die (Nietzsche, 1989, p. 246).

Nietzsche begins his essay with this small and devastating tale of science fiction. This genre that was just emerging was not unknown to the philosopher. In his notebooks, Nietzsche reveals his fascination for science fiction: he thinks that writing scientific-roman is one of the highest purposes, that the will to power will lead us to Mars and equates this genre with tragedy (Roberts, 2009). In all his philosophy projects, he criticizes the ideas that occidental culture has considered as universal and transcendent since Plato, such

as morals and metaphysics. The use of the motif of cosmic insignificance can be understood as a way in which the philosopher puts into perspective another one of those transcendental ideas: the truth. In this essay, he argues that what we call truth is nothing but a convention that everyone finds comforting and that rests on a web of metaphors and rhetorical games.

I have shown here three different ways of seeing cosmic insignificance, but you should not think that these are mutually exclusive. In Sagan's text, the astonishment before the universe and the desire to put into perspective the problems of humanity are equally evident. And in Pascal, it is present in the sense of wonder, even though it beats against the terror of infinity.

The dawn of cosmic solitude

The feeling of solitude can be driven by many factors. Take, for example, the case of the monster that asks Dr. Frankenstein to create him a partner because he feels isolated. This being's loneliness is provoked by the cruel society that alienates and rejects him. On the other hand, cosmic solitude has to do with a sensation of insignificance and that humanity is the only one of its kind to exist in the universe. Social and personal rejection do not play a role here. Insignificance and cosmic solitude are very similar and many times they appear together as if they were two aspects of the same misery of existence. However, while insignificance came about not long after the first publications on heliocentrism, cosmic solitude was, in turn, relevant until the end of the 19th century.

One of the factors that drove cosmic solitude has to do with the interest in the existence of extraterrestrial life. Pondering about the existence of "men" in other worlds is not something recent. Various texts about inhabitants of the Moon can be found since ancient times, such as *Mahabharata*, *The Wonders Beyond Thule*, *Gargantua and Pantagruel*, etcetera. The tradition of imagining life (mainly on the Moon) continued after the arrival of the heliocentric paradigm with texts such as *Somnium* (1634) by Kepler; *The Discovery of a World in the Moone* (1638), by John Wilkins; and *The Man in the Moone* (1638), by Francis Godwin. However, it was not until the end of the 19th century that concern over the existence of an extraterrestrial civilization came to the fore. What triggered this fever were the observations of Giovanni Schiaparelli. During the Mars opposition of 1877, this important astronomer, director of the Brera Observatory in Milan, saw *canali* on the red planet. *Canali* in Italian means *channels*, but it was mistranslated into *canals*, a word that implies that they were built by intelligent beings (Sagan, 2013).

A few years later, Percival Lowell published *Mars* (1895), a book where he claims that those canals were built by intelligent beings. The subject attracted enormous attention from the public because, unlike previous texts, now extraterrestrial life seemed to be supported by scientific evidence; that is, the canals observed by Schiaparelli and Lowell themselves. Although today it is known that Schiaparelli's and Lowell's assumptions are completely false, in their time, they had a huge impact. Newspapers would be fundamental to propagating the idea that there were beings on the red planet in the mind of the public. The article "A signal from Mars" (1896), from *The San Francisco call*, says that M. Javelie discovered luminous projections that were interpreted as: "inhabitants of Mars were flashing messages to the conjectures inhabitants of the sister planet Earth." (A signal, 1896, p. 16). In "Hello, Earth, Hello" (1920), an article published by *The Tomahawk*, the opinions of several scientists and inventors from the era regarding the possibility of signals from other planets are presented. The article creates a very broad panorama on everything that was believed about extraterrestrial civilizations: how to communicate with them (wireless telegraphs, balloon-suspended radio antennas, light beams); the possible planets on which they live—Mars or Venus; and even their physical appearance and supposed superhuman intelligence. The article included the notable opinions of Lowell, Edison, Tesla, Marconi, and Einstein (Hello, Earth, 1920, p. 6).

Lowell's books have a seductive and poetic prose that captivated the public. Take for example the introduction of his book *Mars* (1895), where he uses a bunch of metaphors and motifs. One of them is, of course, cosmic insignificance: "Indeed, we seldom stop in our

Insignificance and cosmic solitude, continued

locally engrossing pursuits to realize how small the part we play in the universal drama." (Lowell, 1896, p. 4). This author also denies cosmic solitude: "there is no indication that we are sole denizens of all we survey, and every inference that we are not" (p. 3); and later: "we cannot seriously take ourselves to be the only minds in it all." (p. 5). In Lowell, cosmic loneliness does not appear with the same force as in later texts, that feeling of rootlessness and infinite orphanhood is not yet present. However, his speculations and his writings laid the foundations for this topic to be taken up again in the following decades.

The contributions of Bertrand Russell, Joseph Conrad, and Vicente Huidobro were fundamental in the development of the topic of cosmic solitude, since it could be said that they are the first to give it great emotional and philosophical depth. Russell was one of the most remarkable philosophers and logicians of the 20th century, as well as a pacifist, atheist, and promoter of nuclear disarmament. In his essay, "A Free man's Worship" (1903), he captured the anguish that was felt after the unity and perfection between humans, divinity, and the universe was put into crisis. The essay begins with a conversation between Mephistopheles and Faust, in which the former claims that god created humanity because, jaded by the choirs of angels, he wanted humans to praise him despite treating them with cruelty. Thus, humans were created for the lack and perpetual scarcity, as a result of the whim of a ruthless being that rejoices in its misfortune. Immediately after the dialogue, Russell adds: "Such, in outline, but even more purposeless, more void of meaning is the world which Science presents for our belief" (Russell, 1961, p. 67). Russell resorts to the legend of Faust, a wiseman who sells his soul to the devil, as a metaphor for what humanity has done: sacrificed their souls in exchange for scientific knowledge. The essay focuses on how to confront this new world devoid of divine meaning which has been created by discoveries in physics and biology. Both sciences created a deep crisis of faith; the first with heliocentrism and the second with the theory of evolution, and Russell devotes a chapter to each of these crises in his book *Religion and Science* (1935). Later, he writes:

> In the spectacle of Death, in the endurance of intolerable pain, and in the irrevocableness of a vanished past, there is a sacredness, an overpowering awe, a feeling of the vastness, the depth, the inexhaustible mystery of existence, in which, as by some strange marriage of pain, the sufferer is bound to the world by bonds of sorrow. [...] from the great night without, a chill blast breaks in upon our refuge; all the loneliness of humanity amid hostile forces is concentrated upon the individual soul, which must struggle alone, with what of courage it can command, against the whole weight of a universe that cares nothing for its hopes and fears (Russell, 1961, p. 71).

Russell describes a cruel universe in which human beings must confront solitude. In his tone, one can sense the hybris of the epic heroes that valiantly fight against the inexorable forces of fate. Loneliness was part of Russell's general conception of existence. He mentions it frequently in his letters (Russell, 2002, n. 13, 17, 21, 29, 236) and in the "Introduction" of his famous book *History of Western Philosophy* (1945), he writes that "cosmic loneliness" is the condition in which humanity finds itself and against which philosophy must be made (Russell, 1946, p. 11).

Joseph Conrad writes about cosmic loneliness in a similar tone to Russell, as if it were a struggle, something terrifying and disastrous against which human beings must constantly fight:

> One of those dewy, clear, starry nights, oppressing our spirit, crushing our pride, by the brilliant evidence of the awful loneliness, of the hopeless obscure insignificance of our globe lost in the splendid revelation of a glittering, soulless universe. I hate such skies (Conrad, 2011, p. 52).

Conrad's character feels tormented by a night of furious clarity. The spectacle of the stars did not incite the plenitude of communion with nature, unlike what Walt Whitman feels in the poem "When I Heard the Learned Astronomer." (Whitman, 1995, 250). Whitman prefers the mystical experience of looking at night over astronomical knowledge. Rather, Conrad feels a sense of misery while remembering the loneliness

and insignificance of his life and of all of humanity. It fits to mention that Russell was a close friend of Conrad and that he admired this deep understanding of solitude that was transmitted through his novels. According to Moran (1982), it is this shared vision of the world and this feeling of loneliness that made them so close while being so different (p. 40). Solitude is a constant in Conrad's work. This along with other subjects, such as the tragedy of existence, the debility of human nature, and the loyalty of lost causes, make up contemporary sensibility (Meyers, 1990, p. 186).

The Chilean poet Vicente Huidobro records in *Altazor* (1931) the feeling of solitude that the cosmos provokes:

> Why did you suddenly one day feel the terror of being?
>
> And that voice that shouted you're alive and you don't see yourself living
>
> Who made your thoughts converge at the crossroads of all the winds of pain?
>
> The diamond of your dreams shattered in a sea of stupor
>
> You're lost Altazor
>
> Alone in the middle of the universe
>
> Alone like a note flowering in the heights of space
>
> There's no good no evil no truth no order no beauty
>
> (Huidobro, 2015, p. 17).

In "Canto I," the speaker advances through a meaningless universe. Just like in Donne and Russell, the crisis that Huidobro confronts relates to the achievements of science. It is the scientific paradigm that has removed beauty from the universe and which has caused existential anguish. A few verses later, the Chilean poet adds: "I feel a telescope pointed at me like a revolver" (p. 17). The telescope, a symbol for astronomical research, is a threat to Huidobro. It is the great eye that, in its eagerness for knowledge, has deprived human beings of meaning. Vicente Huidobro was interested in astronomy and he liked to attend nocturnal gatherings with this purpose. Born in the second half of the 19th century, Conrad, Russell, and Huidobro bore witness to the enormous scientific advances of the time and both felt alone before the new universe that science was revealing. In these three writers, cosmic solitude can be seen as a terrible feeling that humanity has to deal with.

But soon, cosmic solitude went to science fiction. This literary genre has a natural concern for the impact of scientific and technological developments, so it seems to be the ideal niche for the theme of cosmic solitude to evolve. In Olaf Stapledon's novel, *Star Maker* (1937), the protagonist is in a moment of deep depression in the face of the imminence of war. Then, seeing a star makes him think that there is something that unites the human with the cosmos and other beings, and that gives meaning to the desire for community: "With painful clearness I realized that the purpose of my pilgrimage was not merely scientific observation, but also the need to effect some kind of mental and spiritual traffic with other worlds, for mutual enrichment and community" (Stapledon, 2004, p. 30). In those lines, Stapledon moves away from the vision of aliens that other science fiction writers have. For example, in *The War of The Worlds* (1898), H. G. Wells describes the Martians as belligerent and destructive beings. On the other hand, according to Rutledge (1982), Stapledon's novels: "represent a complex intellectual quest after an adequate philosophical grounding for the concept of community." (p. 274). Before Stapledon, literary writers like Russell and Huidobro had related cosmic insignificance and solitude with scientific progress, as if the science was guilty of its existential crisis. On the other hand, Stapledon introduces an important innovation: the protagonist feels overwhelmed for several personal problems and specially for his violent context. Thus, the origin of cosmic solitude is not the scientific knowledge but the imminence of war.

In his texts, Clarke frequently speaks of solitude (Clareson, 1976) and, in addition, unravels the relationship between this and contact with extraterrestrial life. This is one of the central themes that comes up in many of his fictional texts, such as "The Sentinel" (1951) and *2001: A Space Odyssey* (1968). He also sheds

light on this subject in his essays, which can be classified somewhere between scientific dissemination and speculation, such as in the case of *Report on Planet Three* (1972) where he writes: "Even if our cosmic conversation never rises above the 'Me Tarzan-You Jane' level, we would no longer feel so alone in an apparently hostile universe" (Clarke, 2011).

In "The Sentinel," a story that contains the basic elements that will later be part of *2001: A Space Odyssey*, an explorer sees a reflection of light in the Moon. Impelled by curiosity, he enters one of the mountain formations that surround *Mare Crisium*, where he finds a pyramid protected by a kind of force field. The protagonist explains that such a strange entity must be the creation of a very old alien race that wandered through space leaving those pyramids, those sentinels, on every planet where they thought that life could emerge. The pyramid was purposely placed on the Moon, in a way such as a test, because to get to it, you had to have high-tech abilities. What this ancient race was looking for was not just life, but rather another advanced civilization with whom a conversation could be established: "Theirs would have been a loneliness we cannot imagine, the loneliness of gods looking out across the infinity and finding none to share their thoughts." (Clarke, 1976, p. 164). Clarke was the first to clearly suggest this idea that it is only with the encounter with another extraterrestrial civilization that we complete ourselves and that we can suppress the radical vacuum of our own existence.

Traditionally, one of the solutions to solitude has been to look for the company of the friends, the couple, etc. The novelty is that Clarke's characters seek the relief of loneliness in the company of a neighbor who is not human. In Clarke, it can be seen as the influence of Stapledon, a writer he admired. Loneliness is not personal, but that of the entire human race, incapable of recognizing itself if it is not in the mirror of an alien civilization.

In the book *Intelligent Life in the Universe* (1966), a text that Sagan wrote in collaboration with Iosif Shklovskii, he says:

> Are there other intelligences in the universe? Is the Galaxy filled with civilized worlds, diverse and unimaginable, each flourishing with its own commerce and culture, beffiting its separate circumstances? Or can it be that we are alone in the universe, that by some poignant and unfathomable joke, ours is the only civilization extant? (Sagan & Shklovskii, 1966, p. 357).

This is the first popular science text where the search for extraterrestrial intelligence is clearly related to cosmic solitude, a union following Clarke's footsteps. It is a crucial moment because Sagan laid down the groundwork for how to understand and justify to the public the scientific search for extraterrestrial intelligence. From this moment forward, cosmic solitude became commonplace in nearly every popular science text regarding this subject. Examples of this seem to be endless: from the question "Are we alone?" on the "About us" page of SETI Institute, to the title of the book *Five Billion Years of Solitude: The Search for Life Among the Stars* (2013), by Lee Billings. Popular science's predilection for the motif of cosmic solitude is due to the fact that it is much more appealing than other approaches to win the sympathy of the public and the financing of governments. In other words, who would want to fund an investigation whose objective is to contact a civilization that could destroy us?

The friendship between Sagan and Clarke generated a fruitful exchange of ideas. Sagan proudly claims that his scientific speculations inspired the author; that he helped him to "resolve a critical plot issue in movie *2001*"; and that he sent him photos of the *Viking* and *Voyager* probes (Sagan, 1981, p. 2). We can imagine this leading scientist sending photos of planets that humanity has seen for millennia merely as bright points in the sky to a leading writer. And now, they have been shown in detail, displaying their clouds and their bands, something that no other generation has seen before. Here we have the writer inspired by the astronomer. But the opposite also deems true. Sagan (1981) writes: "What Arthur has done for me is vastly greater" (p. 2). In this essay, Sagan refers specifically to Clarke's great influence in preparing the presence of humanity beyond Earth. Even though he does not explicitly state it, it is also clear that Sagan has been inspired by Clarke's

way of seeing cosmic solitude and how the sensation is alleviated by the encounter with an extraterrestrial civilization. Carl Sagan left a legacy of works that have become part of current consciousness. His speech, "Pale Blue Dot," or his question "Are we alone in the universe?" excellently fulfilled their mission to spread scientific knowledge, but they went much deeper. Carl Sagan is not just a scientist or a disseminator of science, but a poet, whose metaphors manage to inspire and captivate readers.

In accordance with Dick, three events mark, in the 1960s, the beginnings of the modern era of the search for extraterrestrial intelligence:

> (1) the publication of the landmark article by Giuseppe Cocconi and Philip Morrison, "Searching for interstellar communications," in *Nature* in 1959, suggesting that a search be carried out at the 21-cm radio wavelength, (2) Frank Drake's Project Ozma in 1960, which carried out the first such search at Green Bank, West Virginia, and (3) a small but now legendary conference at Green Bank in 1961, where the feasibility of a search was discussed (Dick, 2006, p. 3).

One of the most important contributions of the Green Bank conference was the Drake equation (Drake, 2014), which tries to answer how many intelligent civilizations exist in our galaxy. This equation is composed of astronomical, biological and cultural variables. These include the number of stars in the Milky Way, how many of them have inhabitable planets, the fraction of those planets that can foster life or civilizations and the average lifetime of a civilization. The issue lies in the fact that it's practically impossible to know the exact value of some of the variables in Drake's equation. Nonetheless, some calculations suggest that the number of advanced civilizations in our galaxy are in the tens of millions (Sagan, 2013, p. 319).

It seems to be that the universe is full of intelligent life, however it still has not been detected. Is it possible that we are alone in infinity? The fact that we still have not established contact with extraterrestrial life is referred to as Fermi Paradox. The phenomenon got its name from a conversation that took place in 1950 about flying saucers when Fermi exclaimed, "Where is everybody?" (Davies, 2011, p. 168). Multiple explanations have been developed (Webb, 2002) for the contradiction between the universe, supposedly so chock-full of life, and the sterile silence that surrounds us, from those that have a scientific sustenance, like the one that argue that the closest civilizations are several hundred light years away, to those that are rooted in science fiction, like the hypothesis of the dark forest, which Cixin Liu delves into in his homonymous novel.

One of the explanations for the Fermi paradox is that of the great filter. It states that, by developing advanced technology, most civilizations destroy themselves. Thus, although life has arisen in many places, very few societies manage to survive long enough to come into contact with others. The great filter explanation materialized from the observation of what happens in our own planet: contamination, the mass extinction of species, the destruction of ecosystems, armed conflicts and the constant threat of nuclear war. The 20th and 21st century are marked by a constant shadow of guilt, rage and fear. There is a sense of hopelessness in seeing that humanity has driven itself to the brink of self-destruction. Along with the search for extraterrestrial intelligence, the feeling of despair is what gives so much strength to the cosmic solitude in the second half of the 20th century.

In the chapter "Encyclopaedia Galactica," in his book *Cosmos* (1980), Sagan conducts a science fiction exercise on the theme of the great filter. He describes a hypothetical encyclopedia where the descriptions of civilizations that have reached maturity are placed (Sagan, 2013, p. 33-35). This closely resembles the story "Silly Asses," by Asimov. In Asimov's text, Naron records humanity in a book, along with the civilizations that have reached maturity, but almost immediately erases it because he realizes that they use nuclear energy for war purposes. Asimov makes a sharp criticism where he points out that, despite humanity's great technological advances, it suffers from a moral blindness that has produced a huge trail of destruction and death. In *Cosmos*, Sagan also criticizes the devastation that human beings have caused. If

other civilizations are the same, that would be a sad explanation of our loneliness: "Perhaps civilizations arise repeatedly, inexorably, on innumerable planets in the Milky Way, but are generally unstable; so all but a tiny fraction are unable to survive their technology and succumb to greed and ignorance, pollution and nuclear war." (Sagan, 2013, p. 315).

In one of the most recent texts on cosmic solitude, its link to destruction is also evident. In the science fiction tale "The Great Silence" (2016), by Ted Chiang, the narrator is a parrot that lives near Arecibo, one of the most potent radio telescopes on Earth. He reflects upon why humans are so obsessed with the search for extraterrestrial intelligence. He argues that the parrots are exactly what we are looking for: a non-human species capable of communicating with us. In this story, as in the other works of Ted Chiang, language is one of the central themes. Thanks to language, it is possible to communicate and thus, exist. Language and communication are what oppose death. The narrator seems to know those texts by Clarke and Sagan by heart where cosmic solitude is alleviated through an encounter with the other. Unfortunately, meeting with humans has been devastating because we have remained deaf to the voices of the other beings. Humans have not only been incapable of recognizing the intelligence of parrots, but we have driven them to the brink of extinction. This story is not a criticism against SETI, but rather against the insensitivity of human beings in recognizing the richness of their environment. It is also a call to halt the mass extinction of species. The feeling of solitude does not arise from wellbeing or from deep happiness, but rather from deprivation and pain. That is why cosmic solitude became a subject with such resonance from the second half of the 20th century. In the texts of Stapledon, Clarke, Sagan, and Chiang, the sense that our civilization is about to be filtered, and on the verge of destruction is the soul of cosmic solitude.

The only home we've ever known

Cosmic solitude and insignificance emerge from new discoveries, but they have also inspired scientific development. It is impossible to ignore the fact that cosmic solitude, as developed by Clarke, and the modern era of SETI had an almost parallel evolution. It would be naive to think that researchers are in an ivory tower, perpetually locked in the search for objective knowledge. Many scientists continue to declare that their curiosity and creativity have been sparked by science fiction. A detailed studio of how cosmic solitude has influenced these researchers would exceed the objectives of this paper. However, it seems pertinent to note that there are many examples of scientific projects that were inspired by cosmic loneliness: the Ozma project; the plaques onboard the *Pioneer 10* and *Pioneer 11* probes; the Voyager Golden Record; the message sent in 1974 to the Great Cluster in Hercules; or, more recently, the *Perseverance*'s calibration plaque with the inscription "Are we alone?" (Chang, 2021). Using the terminology of Holton, solitude and cosmic insignificance are *themata*, meaning, beliefs that play a fundamental role in the inspiration and creative process of scientists (Holton, 1988, p. 10).

The scientific search for extraterrestrial intelligence has profoundly influenced the way that people in contemporary society view themselves. Paradoxically, in the geocentric model, the feeling of cosmic solitude was unthinkable. Although humanity was the only one, there was no place for solitude because the system was already complete and perfect, coddled by divine care. On the other hand, heliocentrism opened the possibility that in the vastness of the infinite cosmos, there could be other civilizations. Or not. Although some calculations about Drake's equation seem to show that the universe is full of life, the truth is that we are still alone.

In the poem "Nineteen Hundred and Nineteen," by Yeats, the swan is the symbol of solitude by excellence. This apocalyptic text reads as follows:

Some moralist or mythological poet

Compares the solitary soul to a swan;

I am satisfied with that,

Satisfied if a troubled mirror show it,

Before that brief gleam of its life be gone,

Insignificance and cosmic solitude, continued

An image of its state;

The wings half spread for flight,

The breast thrust out in pride

Whether to play, or to ride

Those winds that clamour of approaching night.

(Yeats, 1996, p. 208)

The swan, or the parrot by Ted Chiang, is an animal that sings when it knows that death is close. It does not bend in its meeting with fate, but with bravery and beauty, it confronts death with his wings wide open. In the same way, cosmic solitude emerges from a sense that disaster is imminent, and that humanity is about to be devoured by the night that it has created itself. But there is hope. Just as the swan, fatality can and should be assumed. The swan is a model for that soul that is ready to fly, the one that will bravely face the tragedy. Cosmic solitude has prompted us to search for kindred connections in the stars. Perhaps it inspires us also to create solutions for the devastation that looms over us.

Insignificance and cosmic solitude, continued

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JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

A Sense of Wonder: John McHale, from Sci-Fi to Future Studies

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Abstract: In his article "'I wonder...', A short history of amazement," the art historian John Onians dissects the multiplicity of meanings of this expression. He explains that "to feel wonder" means to be aware of the impact that an "extraordinary sensory experience" has on us (Onians, 1994, p. 11), and also links the wonder with questioning and curiosity, hence its inherent tension towards the future. Indeed, the "sense of wonder" concept is widely used in science fiction circles where it catalyzes the blend of pleasure, excitement, and apprehension felt by a viewer when seeking to imagine that which is as yet unknown. This article details how this feeling serves as a guiding thread in the journey of artist and researcher John McHale, both for artistic experiments in the 1950s, and then for future studies research methods in the 60s and 70s. Investigating this historical moment, it bridges the gap between the reception of science fiction as a popular genre and the recognition of the methodological richness contained in the creative process that underpins it.

Keywords: *art history; amazement; sense of wonder; The Independent Group*

"Del Close told me later I was wandering around looking "wonderful... in the sense of full of wonder." That's the best description I can imagine."

Description of a situation of sensory and psychic destabilization by drugs, light and music (Claire Brush, quoted in Wolfe, 1968, p. 282).

[Figure 1] Eduardo Paolozzi, The Ultimate Planet, ca. 1952, part of the "BUNK" col-lages, printed papers on card, 25,1 x 38,1 cm, Tate collection, London, The Estate of Sir Eduardo Paolozzi, Photography © Tate

At the turn of the 1950s, Science Fiction invaded mass consumer societies' everyday visual space in a wide variety of forms and media—from comics, films, and television to advertising, toys, and industrial products—generating what has been called a "contamination of reality" (Valéry, 2013, p. 138).[1] The United States in particular, through a culture enhancing of scientific and technological development lined with an economic context that led to the rise of an entertainment industry, proved fertile ground for the genre's spectacular growth. In Great Britain, which was undergoing post-war reconstruction, it was enjoyed both in its own right and for its association with the US.

SF was a topic for discussion for a group of young people who met at the Institute of Contemporary Arts in London between 1953 and 1956, who came to be known as the Independent Group (IG). Three of its members were all deeply drawn to the US and its popular culture: the art critic Lawrence Alloway, the theorist Reyner Banham, and the artist John McHale.[2] As noted by the art historian Nigel Whiteley, their focus on SF was an indicator of their "mythologized and romanticized" view of US popular culture, as they were only looking at its *progressive* faction—the one that carried the manifestations of technological and cultural evolutions—as opposed to the *conservative* faction (soap opera, romantic literature, etc.) (Whiteley, 2002, p. 100). Inside this progressive faction, their main focus has not been on SF literature in itself, but rather on the visual forms emanating from the genre.[3] Current literary research suggests indeed that "science fiction was never a genuinely popular form of literature,

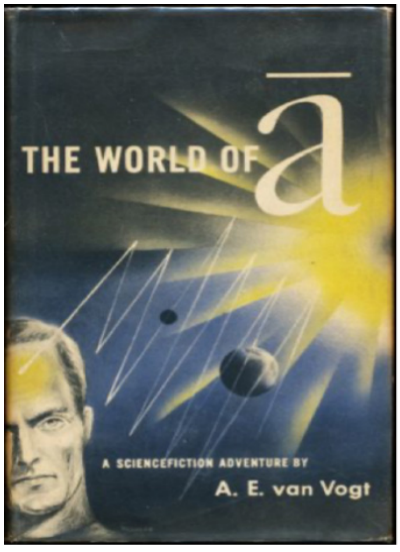
unlike crime novels, westerns, and romance" (Bréan, Klein, 2012). Even in the 1950s, it was consumed by a specific circle of aficionados and found its way into the elite spheres of high culture.[4] On the contrary, the IG members were precisely interested in SF's move towards mass consumption beyond the circle of literary insiders, and how it was received, consumed, and appropriated by popular audiences – this move was driven by its imagery and visual content.

A Genre Swallowed Up by Imagery

For example, SF literature was quickly and broadly adapted for the cinema and, as noted by the writer Christian Grenier, the genre "was swallowed up by imagery" (Grenier, 1994, p. 108). As for the IG members, they were seeking to keep their own unprompted position of good consumers to better understand what these popular SF consumption practices said about the society in which they lived (Alloway, 1961). Most of them coming from middle-class or impoverished family backgrounds, they saw SF as a demotic cultural product that attracted interest from people from all backgrounds, including those denied formal education and access to high culture. Enjoyment was the only criterion for popular SF fans. This approach to cultural practices underpinned the art movement that the IG was then in the process of founding, Pop Art.[5] As Reyner Banham later wrote, "the key figures of the IG—Lawrence Alloway, John McHale, Eduardo Paolozzi, Richard Hamilton, Frank Cordell, even myself—were all brought up in the Pop belt somewhere. American films and magazines were the only live culture we knew as kids" (Banham, 1963, p. 16).

Cheap American pulp magazines rapidly became their preferred format for thinking about SF, focusing on their covers rather than their content.[6] From the start of the 1950s, another member of the IG, the artist Eduardo Paolozzi, used them in some collages—notably the cover of the *Thrilling Wonder Stories* pulp [fig. 1].[7] Lawrence Alloway clarified their approach in his article "Technology and Sex in Science Fiction. A Note on Cover Art": "If we focus on covers we are doing no more than good consumers do when confronted by magazines" (Alloway, 1956, p. 23).[8] The brightly coloured pulp covers, printed using the latest technology, put them at the forefront of an imagery of the time, in the broadest sense of what would be called today visual culture, i.e. a means of understanding the world made possible by way of images. At that time, long before the theorization of the *pictorial turn* by the theorist of media W.J.T. Mitchell (Mitchell, 1992), John McHale noted this primacy of imagery, explaining that in the 1950s, "much of what was going on, simply the language wasn't around to describe it" (McHale, 1977, p. 31).

From the outset, the IG members adopted a reflexive, analytical stance to the materials of mass culture, choosing to study the image of pop culture artefacts rather than the artefacts themselves. They were interested in all types of images, from mass media to advertising and from works of art to illustrations and so on: "[Man's] environment extensions, movie, TV, picture magazine, bring to his awareness an unprecedented scope of visual experience" (McHale, 1959, p. 82). Scientific imagery was also one of the basic visual materials they drew on for their own creations, using it directly in their collages and in their thinking and theorising. SF was the point where popular art and (high) scientific culture came together. These various sorts of images were of equal interest and the IG members refused to rank them on a scale of value.



[Figure 2] A. E. van Vogt (1948), *The World of Ā*. Simon & Schuster.

The IG's thinking on this point was influenced by Alfred E. van Vogt's futuristic novel *The World of Ā*, initially published in serial form in the magazine *Astounding Science Fiction* in 1945, then as a book in 1948 [fig. 2]. *Ā*, pronounced "Null-A", refers to a step away from Aristotelian logic, typified by duality—good vs. bad, for instance—and immutability—stability and immobility. The novel itself is based on the theory of non-Aristotelian logic developed by the philosopher and mathematician Alfred Korzybski, who believed that Aristotelian thought was no longer suited to the scientific discoveries of the time (Korzybski, 1933).[9] This could not help but capture the imagination of SF authors, who were always on the lookout for new scientific theories. *The World of Ā* has been an effective way of more or less skilfully conveying Korzybski's new scientific theory to a wider audience. The novel encouraged the IG to move away from predefined cultural values and hierarchies.[10] This reading prompted Lawrence Alloway to come up with the concept of the "fine art-popular art continuum" connecting elite and popular cultural practices in a horizontal, non-hierarchical spectrum. The criteria to grasp them were nevertheless to remain distinct; as Alloway wrote, "it is no good giving a literary critic modern science fiction to review … and no good asking the music critic for an opinion on Elvis Presley" (Alloway, 1958, p. 84).

Social Benchmarks

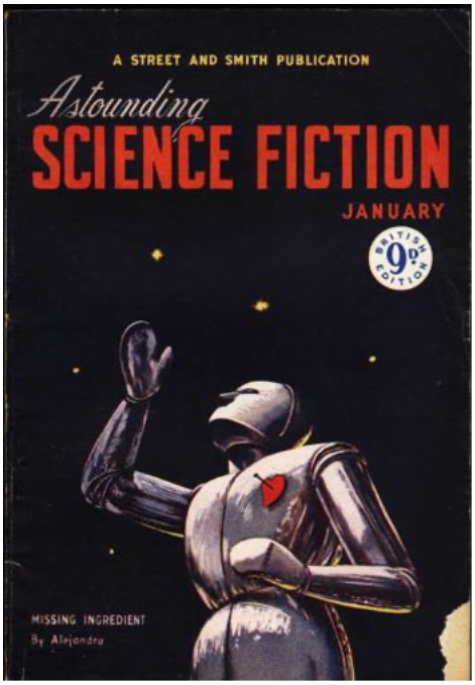
The 1950s paved the way for mass communication, which developed particularly out of experiments with electronics in the United States during World War Two, leading to key technological breakthroughs. Alongside advances in the information and communication sectors came the development of nuclear energy and the space race, all unprecedented new departures in humanity's relationship with its environment.[11] More than a genre, SF was a *mode of discourse* opening up thinking on the present age (Grenier, 1994, p. 12.). By taking up the most salient issues facing society, it spoke to what interested, troubled, and fascinated people most. Notably through visual means, SF was one important way for a mass audience to come to terms with these last advances. As Alloway accounted for, SF played into "the assimilation of the mounting technical facts of this century" (Alloway, 1958, pp. 84-85) and helped "to give currency to new ideas […] by translating new concepts into memorable images. This is worth doing and, on the whole, the fine artists have given us no recent aid in this kind of visualizing" (Alloway, 1956, p. 23). In an age of loss of historical reference, SF's offshoots destined for a mass audience—pulps and films—provided more evocative social benchmarks than traditional art forms associated with high culture, which was a central factor in its popularity as a genre. According to McHale, fine arts "may no longer be accorded the prime role in conveying the myths or defining the edge of innovation in society" (McHale, 1967a, p. 10). Rather, SF, among other popular culture productions, took over the role; as the art historian Valérie Mavridorakis has explained, it produced "the perfect symbiosis of techno-scientific themes and pop aesthetics" (Mavridorakis, 2011, p. 17), standing at the juncture of two fields that came to the fore in the 1950s—technology and mass culture.[12]

SF authors sought inspiration as much in the hard sciences as in the human sciences. Of SF imagery, Alloway wrote that "the currency of such symbols […] is an index of the acceptance of technological change by the public in the United States" (Alloway, 1956, p. 20). The US thinker Fredric Jameson has likewise outlined that its aim is not "to give us 'images' of the future […] but rather to defamiliarize and restructure our experience of our own *present*" (Jameson, 2005 p. 286). The editorial team at the magazine *Astounding Science Fiction* [fig. 3] foregrounded this idea in 1953 when they wrote of "the immense and joyous stimulus of living in a period when the world is changing, accelerating, faster than it ever did before" (Campbell, 1953, as quoted in Robbins, 1992, p. 8) and insisted on the importance of cultivating a sense of wonder at such changes.

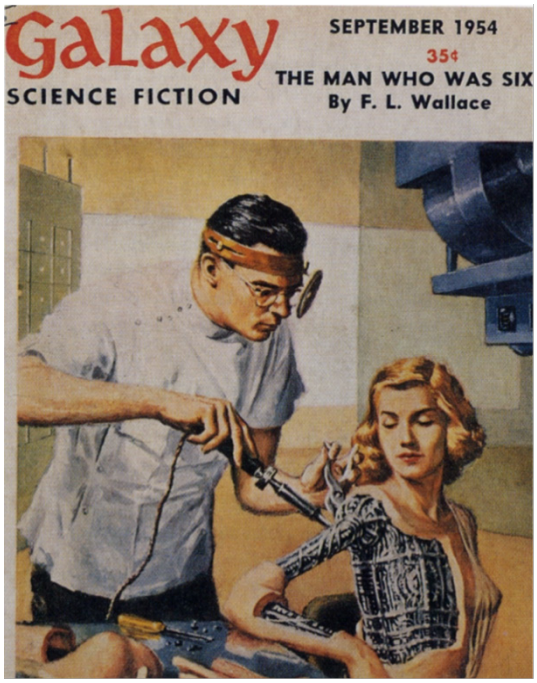
A Sense of Wonder

The *Oxford Dictionary of Science Fiction* defines the sense of wonder as "a feeling of awakening or awe triggered by an expansion of one's awareness of what is possible or by confrontation with the vastness of space and time, as brought on by reading science fict-

JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837



[Figure 3] Cover of Astounding Science Fiction's British edition, January 1950, by Alejandro de Cañedo © 2021 Penny Publications LLC/ Dell Magazines. Reprinted with permission.



[Figure 4] Cover of Galaxy Science-Fiction, September 1954, by EMSH: "showing ROBOTS REPAIRED WHILE U WAIT". Used by John McHale in "The Expendable Ikon" (February 1959) © Galaxy Science Fiction

ion" (Prucher, 2007). For instance, in 1959, McHale describes the emotion triggered by pictures of an augmented humanity that create a dizzying impression of what humans might soon become when merged with technology: "Robots, mutants and mechanomorphs furnish an image in the likeness of man which carries the strongest sense of wonder with a hint of dread" (McHale, 1959, p. 82) [fig. 4 & 5].

At that time, McHale implemented such a sense of wonder, meant as awareness of what is currently happening in the unprecedented expansion of the human sensorium, in his work as an artist in the proposition he made. Together with two other IG members, the artist Richard Hamilton and the architect John Voelcker, McHale worked on the exhibition *This is Tomorrow*, held in London in 1956. Working as a group, they proposed an environment they called "Fun House," reporting on the exponential rate of technological and social change in humanity's daily surroundings. This "Fun House" is generally seen as the founding act of Pop Art and is widely studied as such. However, its relation to Science Fiction is often reduced to its use of Robbie the Robot, a leading character in the recently released SF film *Forbidden Planet* (1956).[13] A picture taken from the film poster was presented on the "Fun House" wall [fig. 6]. The group also had the idea of bringing Robbie the Robot "in person" to the exhibition's opening night, in the form of a promotional mascot.[14]

While Robbie the Robot's presence in *This is Tomorrow* is an obvious sign of the IG's interest in SF as a popular visual art form, with all the symbolic resonance that implies, there is also a subtler link to be drawn between SF and the "Fun House" environment. Recreating the stimuli saturation of contemporary daily life in popular culture, it triggered visitors' five senses with a soft floor that smelled of strawberries, a juke box playing top twenty hits, paintings of optical illusions, a display of a large quantity of mass culture imagery, and so on, thereby seeking to give an account of the sense of wonder potentially sparked by

JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

[Figure 5] Illustrations from John McHale's article "The Expendable Ikon", Architectural Design, vol. 29, February 1959, p. 82, section "Out of Frankenstein, by IBM" © Architectural Design

[Figure 6] The "Fun House" in the exhibition This is Tomorrow, Whitechapel Art Gallery, London, 1956. © RIBA Collections

the changes underway in everyday life, whose effervescence is hard to detect in the black-and-white photographs of the time. While the exhibition's name, *This is Tomorrow*, might suggest a focus on the future, the members responsible for the "Fun House" explained that this title corresponded to their search in the immediate present for ways of thinking about the future, advocating the development of various new potentialities of perception in the audience and of symbolising the interactions they develop in relationship with their surroundings (McHale, Hamilton, Voelcker, 1956). Richard Hamilton said as much in a *BBC* radio programme: "We aren't intending, I don't think, to act as prophets, we're not trying to show what the future is, but we do feel that the only way to find out about what's going on in the future is to look very closely at what is going on at the moment" (Hamilton, 1956, p. 3).

The British SF author J.G. Ballard was close to several IG members, and especially to Eduardo Paolozzi, as he recalled in his autobiography (Ballard, 2008). He visited the exhibition and gave this interesting account:

> They [the IG] were interested in a fresh look at the consumer goods and media landscape of the day, regarded it as a proper subject matter for the painter. I felt their approach had a certain kinship with that of science fiction (in which they were all extremely interested) and I went along to the *This is Tomorrow* exhibition [...] It struck me that these were the sorts of concerns that the SF writer should be interested in. Science fiction should be concerned with here and now, not with the far future but with the present, not with alien planets but with what was going on in the world in the mid-'50s (Ballard, 1984, as quoted in Tsai, 1988, pp. 71-72).

His approach to SF aligned with the IG's concerns regarding the social impact of technological innovations. As Eugenie Tsai notes, "rather than fantasize about

technological innovations, Ballard speculates about the effects a technologically altered environment might have on the human psyche" (Tsai, 1988, p. 73). Similarly, McHale later recalled that "if on the surface we were concerned with technology in many senses, our preoccupations were with the social implications of that technology... we saw that technology expanded the human range" (McHale, as quoted in Robbins, 1990, p. 87). There is a tangible move here from an interest in pulp imagery to enter into the very potential of the SF as a research tool. Ballard later leads the British current of the New Wave and emphasize the literary creative potential of SF in opposition to the hard SF forms centered on techno-scientific predictions. In this respect, Ballard and the IG share a common vision of SF as an experimental way to approach the present.[15]

From Visual to Future Studies

McHale moved to the United States in 1962 and soon began devoting less time to art. Instead, after a Ph.D. thesis entitled, "The Future in Social Thought: With Reference to the Social Theories of Saint Simon, Comte, Mead and Parsons," published as a book entitled *The Future of the Future* (McHale, 1969), he began to focus on Future Studies. How should this shift be read? While his later experiences might seem to be particularly at odds with the IG, they in fact reveal the long-lasting impact of the group's spirit in shaping his later work. In the 1960s, while future research gave way to a plethora of varied methodologies, McHale developed a practice aimed to incite humans to engage with their immediate responsibilities over the long term in building the future according to social and ecological consequences (McHale, 1968). Not at all was he practicing future research as a forecasting activity.

Future Studies is not simply a theoretical discipline; rather, it aspires to implement detailed action plans that, once undertaken, would set the course for the future. The first goal is to identify the objectives for such actions and the fields such elements fall into —sociology, technology, organizational, and so on. SF's contribution to Future Studies has been widely explored (Michaud, 2017). The margin of freedom enjoyed by SF in the art of speculation is, of course, not the same as that dictating how Future Studies is conducted within an academic methodological framework. Still, both are built by extrapolating trends from the present.[16] A paper in the futurology journal *Futuribles* has argued that "by means of a deconstruction of certainties and an exploration not only of possibilities but also of impossibilities, SF plays its part in the transformation of the social representations we draw on to act and to explain the world" (Gendron, Audet, 2016, p. 76). SF pushes the gaze past certain ecological, technological, and political points and adopts a fictional standpoint to observe the possibilities for human life in new conditions from which in reality there would be no way back. Political science researcher Yannick Rumpala has studied SF's "intellectual labour of 'possibilisation'" in its bold exploration of new paths extending beyond our familiar frames, particularly socio-political ones (Rumpala, 2016, p. 58). The same labour of possibilisation is shared by future researchers, who consider the various potential directions the future might take depending on key choices made in the present. What SF does in fiction, Future Studies does as scientifically as possible, studying the consequences of collective actions and choices on the future. In McHale's specific case, he was not so much interested in SF for futurological fantasies as for its conception of interweaving temporalities, which he was to express with this maxim: "The future of the past is in the future. / The future of the present is in the past. / The future of the future is in the present." (McHale, 1969, incipit).

McHale soon opened his own research hub for Future Studies, the Center for Integrative Studies.[17] The research strands he developed drew on a theoretical model inherited from the IG's continuum, placing the various disciplines that fed into Future Studies on a horizontal spectrum. In this ideal theoretical model, the hard and human sciences were interconnected, forming a non-hierarchical network in which each element contributed equal value. The aim was to digest the content of various fields of study and their methodologies, not simply to be passively subjected to their influence. This act of taking ownership of each field is what prompted the choice of the adjective "integrative" in the Center's title. The concept of integration

JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

is here to be understood as the reverse of synthesis: the aim is not to take elements from each discipline to form one coherent whole, which would involve a degree of loss. It rather turns the entire set of various disciplines into a new system while leaving them enough margin to flourish in their own right.

The Artist-Scientist

In 1967, in his capacity as a future researcher, McHale

[Figure 7] Cover of *Architectural Design*, 37, February 1961, Special Issue 2000 +, edited by John McHale © Architectural Design

edited a special issue of the journal *Architectural Design* on the theme 2000+, looking beyond the threshold of the year 2000. Its cover [fig. 7] features a close-up of an astronaut's head and shoulders against a deep red background; the human being is completely hidden behind his opaque helmet and technological equipment. The image, highly effective in visual terms, says far more than any enticing slogan about the special issue's content. McHale's introduction restates his belief in the primordial power of images over human minds: "[...] the 'imagery' of technology may be as powerful an agency of change as the rational understanding of its scientific and technical basis" (McHale, 1967b, p. 64).

McHale invited his collaborator, the architect, engineer, and future researcher Richard Buckminster Fuller, to write a piece for the special issue. The choice of an architecture journal to develop this theme 2000+ might seem surprising, but Buckminster Fuller and McHale's joined work expanding the notion of architectural design at the time made it possible to bring in a broad approach to present and future impacts of technological change on humans and their environment (Wigley, 1999, pp. 38-49). In the 1960s, the two men were working together on a project at the crossroads between architecture in this broader sense and future research, i.e. data-based planning: the World Game (Wasiuta, 2021).[18] The program, often described as utopian, aimed to improve the distribution of resources across the planet to combat inequality and cope with the significant population increases forecast for the future, and to redefine the standards of industrial societies to make their development beneficial to all. Buckminster Fuller, the renowned inventor of the geodesic dome, was one of the key figures of the twentieth century for his visionary work and the extent of his inventiveness, which easily bridged the gap between the narrow sphere of the household and the global scale of the planet. After they met in the mid-1950s, it was Buckminster Fuller who brought the artist McHale to future research as a science, ignoring the artificial categories generally assigned to the "specialists" in each arena:

> I find it difficult to speak of artists or scientists, I prefer the term, artists-scientists. I think there is hardly any difference between so-called artists and scientists. Really great artists are scientists and really great scientists are artists (Buckminster Fuller, archive, undated).

For Buckminster Fuller, artists and scientists alike were characterized by the way they worked with their intuition, a property that was hard to pin down, because it was born of the interaction between the subconscious approach to a subject proper to an individual, the questions they asked themselves consciously, and

the work carried out to answer them.

> The artists-scientists have not lost their intuitive coordinating power [between these three elements]. They are the ones who completely transform the environment of man by virtue of which man's problems do get solved (Buckminster Fuller, archive, undated).

McHale, for his part, saw the ability to assimilate a quantity of facts to be synthesized into the building blocks for new sets of concepts as simply the use of a creative faculty: "The link between science, humanities and arts is the creative capacity to continually restructure human experience, i.e., the accumulation of facts about environment into fresh configurations" (McHale, 1966, p. 1). As a future researcher, he, like others, faced many biases that could potentially skew the due process of scientific research, including the cultural bias of a researcher enclosed in his own social world, the temporal bias of a researcher who observed only trends of change in the recent past, and so on. All such biases threatened the validity of his work and were to be avoided as far as possible. The cognitive bias, or the limits of imagination, is of particular interest for the present study. As François Briens has explained, Future Studies includes "an essential exploratory dimension that requires mistrust of preconceived ideas, a broadening of the frames of analysis, and calling everything into question. Imagination is not the opposite of reason in this case; rather, the two are complementary" (Briens, 2016). In the 1960s, Buckminster Fuller's and McHale's World Game project represents an important future research initiative on a global and super-political scale; it was the first of its kind, whose method was characterized by its reliance on both rigorous statistics and mathematics—using the data then available—and on a capacity for imaginary projection. Only the combination of the two faculties allowed decisions to be taken in the present for actions leading to a desirable future. "Man's future is most likely that which he may most imaginatively conceive of, which, in turn, will determine his action towards its accomplishment," McHale wrote in the special issue *2000 +* (McHale, 1967b, p. 65).

Desirable Futures

At this time, a whole sect of Future Studies, grouped around an organization named *Mankind 2000*, approaches its research activities as an active enterprise of free social design and a space of creation. "Many future researchers in their aim to be taken seriously lack in intellectual courage. Many of today's scientific anticipations and projections are not much more than extensions of the present," regrets Robert Jungk, one of the founders of the organization, in a conference titled "The Role of Imagination in Future Research" (Jungk, 1970, as quoted in Andersson, 2018, p. 166). Their method is as follows: *Mankind 2000* researchers distinguish possible futures, probable futures and desirable futures—all plurals—as shown by their triskell header symbol with psychedelic overtones [fig. 8]. Their work around the concept of desirability leads to a renewed approach to knowledge, which is now envisaged by speculation and is therefore not based on data but on invention. Here, the future cannot be apprehended by a simple empirical observation and the application of scientific forecasting methods; research is extended to human values through an ideological postulate claimed as non-rationalist. Only in a second step are structures and action plans elaborated, which could not have been invented through the opposite forecasting approach. It is a means of leaving space for the imagination (Masini, 2000, p. 491). Thanks to this change in the nature of knowledge, it is now possible for them to envisage true social design work.

[fig. 8] *Mankind 2000* header symbol representing the interlacing of possible, desirable and achievable futures, undated. *Mankind 2000* materials, Committee for Nuclear Disarmament and Peace archives, box 700 (reproduced in

Andersson, 2018, p. 154).

McHale easily made his place in this *Mankind 2000* group where, apart from his very work and numerous publications in the field of future research at that time, he was likely to find a form of legitimacy as an artist. The constant valorization, inside the group, of ways to tackle the cognitive bias of inoperative imagination happens to be what made McHale's "artistic" baggage truly operative in his new research field. "Artistic" is here to be understood in terms of the development of alternative and open modes of thought. To a high-ranking American officer who questioned McHale's qualifications to collaborate on a scientific study of subatomic structures, the latter replied: "My field of expertise? Oh—I paint a bit, you know!" (McHale, as quoted by Banham in Kotik, 1984, p. 37). Throughout his future studies career, he has attempted to never lose, in research methods, the blend of excitement and the sense of wonder provided by other creative means, in order not to be locked up into rational scientific thought, instead allowing imagination to roam free, facing the dizzying future.

Notes

[1] I would like to thank the Centre André Chastel (UMR 8150) for its support for this essay.

[2] All three moved to the United States in the 60s for the rest of their lives.

[3] For more details on this theme, see Robbins, David (1992). "Modernist Sources," The Independent Group: Postwar Britain and the Aesthetics of Plenty, exhibition catalogue, pp. 60-62.

[4] In France, for instance, American SF texts were published in the prestigious journal *Les Temps Modernes*. See Bozzetto, Roger (2003). "Et si l'on définissait les territoires de de la Science- Fiction ?", Quarante-deux [online].

[5] Alloway and McHale are thought to have coined the phrase in around 1954.

[6] Britain was producing its own pulp magazines at the time, but American publications remained the point of reference in Western culture.

[7] Paolozzi initiated the movement of interest on popular imagery with his talk "BUNK" in 1952, then Alloway and McHale organised an IG panel discussion in 1955, focusing largely on contemporary mass culture images.

[8] Lawrence Alloway gave a lecture on SF at the ICA on 19 January 1954.

[9] The complex formulations mask a study of the mechanisms of representation at work in the relationship between man and his actual environment.

[10] One of the group's discussions at ICA, "Dadaists as non-Aristotelians," focused on this theme in April 1955, with the speakers John McHale, Anthony Hill, Donald Holmes, and Toni del Renzio.

[11] The major invention in electronics is the transistor, developed in 1947 by the American laboratory Bell, which later perfected the technique. In 1952, America tested a nuclear bomb on Bikini atoll which was five hundred times more powerful than that dropped on Hiroshima. In 1957, the USSR sent *Sputnik I* and *II* into space, triggering the space race; NASA was founded the following year.

[12] "Science fiction, a mode of expression historically concerned with progress and technology, was then understood as the paradigmatic expression of modern mass culture, whose imagination, themes and techniques offered the easiest means of commenting on, and even subverting, modern society." Achouche, Mehdi, Samuel Minne (2015). "La culture visuelle de la science-fiction, entre culture populaire et avant-garde : Introduction". *Res Futurae, 5* [online].

[13] *Forbidden Planet*, Metro-Goldwyn-Mayer Studios Inc., produced by Nicholas Nayfack, directed by Fred M. Wilcox. The exhibition was divided into 12 sections. The members of section had a great deal of help from the IG members Terry Hamilton, Frank Cordell and Magda Cordell, who were not officially part of the *This is Tomorrow* exhibition.

[14] An ICA member wore the mascot costume to the gallery opening, and walked around the audience before giving a speech written by Lawrence Alloway.

[15] Ballard considered science fiction had the most to offer as a literary form, as he would soon affirm through his publications in *New Worlds* in the 1960s.

[16] This is the extrapolation Banham meant when writing, "History is to the future as the observed results of an experiment are to the plotted graph—that is, you plot on the graph the results of which you are sure, you seek for a line that connects them convincingly and you produce it beyond the last certain point to see where it will lead—so too with all major works of historical philosophy; they extrapolate present trends into the future condition of men." Banham, Reyner (1961). "The History of the Immediate Future.", *Journal of the Royal Institute of British Architects, 7*, p. 252.

[17] The CIS opened in 1968 as part of the School of Advanced Technology at Binghamton State University of New York. In 1977, it moved to the College of Social Sciences at the University of Houston-Clear Lake, Texas.

[18] The two were in contact from 1954 and progressively put in place a joint research programme.

A Sense of Wonder, continued

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JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

Decolonial Speculative Fiction: Indigenous Resistance in *The Marrow Thieves*, *Trail of Lightning* and *Storm of Locusts*

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Abstract: In *Trail of Lightning* (2018), the first installment in the Sixth World series, Rebecca Roanhorse imagines the Navajo Nation after the "Big Water," a global flood created by an earthquake, a thermonuclear war, and the resulting climate change in a speculated near future. In *Trail of Lightning* and its sequel, *Swarm of Locusts* (2019), protagonist Magdalena "Maggie" Hoskie is a Navajo vigilante who hunts monsters and safeguards the Indigenous community of Dinétah, one of few landmasses still above sea level. Both plots center sovereignty, community, and family as loci of resistance through community and kinship. Similarly, Cherie Dimaline sets *The Marrow Thieves* (2017) in a near-future where the climate has warmed to an extent that most of Canada's land is uninhabitable bog. The remaining rainy wilderness is sparsely populated by groups of Indigenous characters hiding from Euroamerican settlers who, having already seized all arable land, now hunt Indigenous people for their bone marrow, which settler scientists hope to use to cure the pandemic of dreamlessness that is decimating the white population.

This article centers critical perspectives drawn from Indigenous scholars like Jace Weaver, Gerald Vizenor, and Qwo-Li Driskill to produce an analysis of the ways that community and family bonds are forged and honored in the fiction through rejecting compulsory heterosexuality and embracing communitist coalition-building. In these three novels, Indigenous people in North America survive the catastrophes that destabilize paternalistic settler governments as a means of commenting upon the ongoing violence against Indigenous people. In their speculations, Indigenous peoples, nations, and cultures, not only survive, but begin to heal from the transgenerational trauma by building kinship structures and non-genetic familial attachments outside the heteropatriarchal, gender parity, nuclear familial structure imposed by settler colonialism.

Keywords: *ethnofuturism, Native American literature, indigenous literature, postcolonial literature*

In "Conjuring Marks," Cherokee writer and scholar Daniel Heath Justice notes that the written word has been used against Indigenous Peoples in North America as a kind of "witchery" that incites genocide (2004, p. 3). Justice cites Cotton Mather's sermons and the judicial language of Indian Removal legislation among his illustrative examples. He also argues that writing from an Indigenous perspective can help to "conjure another world, a more powerful reality [. . .] in which written words [. . .] are a meaningful complement to the healing processes of decolonization and Indigenous empowerment" (p. 4). The imaginative work of world-building through Indigenous lenses has allowed many storytellers to craft fiction that operates as corrective discourses to more widely proliferated colonialist histories about the myth of a "vanishing Indian," locked in a distant past with no future. The very act of imagining First Nations and Peoples as the survivors of an apocalypse works to situate settler culture as a temporary state to be weathered.

In a column for *Uncanny Magazine*, Rebecca Roanhorse (2019) explains that science fiction and fantasy, in particular, may present abundant evidence for Justice's claims. Speculative fiction, Roanhorse claims, allows writers to "speak back to the colonial tropes of science fiction" and thereby "reject these colonial ideas, and instead re-imagine space" in ways "that make room for stories that celebrate relationship and connection to community, coexistence, and sharing of land and technology, the honoring of caretakers and protectors" ("Postcards from the Apocalypse"). This situation of sovereignty—over land, community and relationships—is central in Roanhorse's own *Sixth World* series and in the sort of speculative fiction that might also be joined to the larger discourse about Nationalist readings of literature about Indigenous characters. Justice and Roanhorse[1] suggest that new ways of telling culturally specific stories can have an important impact on the ways in which Indigenous identity is understood in narrative discourse. They argue that world-building of the sort

that contributes to a decolonial process is grounded in centering Indigenous resistance to settler colonialism, which is facilitated, often by coalition-building between and among First Nations. Roanhorse's column points out that it is essential that decolonial speculative fiction "advocates for the sovereign" ("Postcards from the Apocalypse"), which may be important context for the ways that Roanhorse's Sixth World novels illustrate the Navajo Nation's survival in a future in which settlers, the bilagáana, play only a marginal role.

Similarly, Cherie Dimaline told an interviewer for *School Library Journal* that what prompted her to write her novel *The Marrow Thieves* (2017) was being invited to write a piece of short fiction for a volume of Indigenous Futurist stories, and that "at first, [she] thought it was a strange mix, but then really, who better to write a story about people surviving an apocalypse than a people who already had?" (Diaz, 2017). Dimaline noted that when working on the novel, she hoped readers would take away an "understanding that cultural survival is as imperative as physical survival, and in fact, is intertwined." By contributing to storytelling traditions that document and enable Indigenous survival in spite of settler genocides, Dimaline and Roanhorse speculate about the future as a means of reflecting upon the present and historical circumstances of surviving Indigenous communities. They focus on what Gerald Vizenor calls "survivance," or "an active sense of presence over historical absence, deracination, and oblivion" (p. ix) in historiographic narratives. In their fiction, Roanhorse and Dimaline participate in a radical speculation that extends survivance out of the past, through the present, and into the future.

Both of Roanhorse's novels in the *Sixth World* series and Dimaline's novel *The Marrow Thieves* imagine futures in ways that build a decolonizing world and in ways that transtextually refer to ongoing Indigenous sovereignty movements in present-day North America. Dimaline and Roanhorse imagine the possibilities of a such a future, at least in part, as a means of responding to the legacy of sexual violence and the imposition of the nuclear family in place of enlarged affinity groups that function like extended families, which Native Nationalist critic Jace Weaver calls "communitism." In particular, Weaver argues that "to promote communitist values means to participate in the healing of grief and sense of exile felt by Native communities" and that "literature is communitist to the extent that it has a proactive commitment to Native community" (1997, p. 45). All three novels extend notions of family and connection outside the boundaries of compulsory heterosexuality and beyond the impositions of blood quantum.

Describing the impact of rape culture and heteropatriarchy as specific sources of grief, Anishinaabe activist Leanne Simpson notes that "the violence of colonialism really damages our intimate relationships and Indigenous peoples have to continually work really hard to connect to each other in a way that is healthy. It's an on-going collective process because we only exist in our relationships with each other." By choosing to focus on shared values and the providing of support over genetic relationships or systems of gender parity, which are often imposed by settler culture and supported by the terroristic threat of the aforementioned sexual violence, Dimaline and Roanhorse implicitly call for reclamations of sexuality, community, and kinship as a response to trauma and feelings of unbelonging.

Approaching interpretations of *The Marrow Thieves* and the *Sixth World* as Justice, Vizenor, Weaver, and Simpson suggest means attending to the ways in which the novels tacitly or directly contradict a dominant pericolonialist narrative about Indigenous peoples. As noted by Craig Womack and Robert Warrior in conversation with Weaver in their foundational volume *Native American Literary Nationalism*, the most ethical interpretive methodology requires critics to make use of Indigenous intellectual discourses and critical traditions as primary lenses through which the texts about Indigeneity might be read and understood (2006, p. iv). As Roanhorse and Dimaline themselves explicate the purposes of their representation of Diné, Cree, and Anishinaabe languages, traditions, ceremonies, and worldviews in their fiction, they also seek to produce a more accurate sense of the present conditions from which the speculated characters, settings, and themes are extrapolated.

Both novelists' stated intentions are to chart historical trauma and ongoing institutional oppression

through speculative fiction as a synecdoche for the ongoing struggle for Indigenous justice, or, as Roanhorse put it, to make a story that honors "caretakers and protectors" of Indigenous communities. As Abenaki scholar Lisa Brooks notes, readers must attend carefully to authorial intention as their principle purpose is "to comprehend what the author is trying to communicate or argue first, before deciding what they might wish to agree with or critique" and that such striving means considering the cultural contexts in which these stories are told (2006, p. 228). Fortunately, both Roanhorse and Dimaline are quite willing to discuss their intentions frankly with interviewers. When asked what inspired the writing of *Trail of Lightning*, Roanhorse replied, "I was reading these urban fantasies with female protagonists who were half-Native, but they were written by white authors, and their Nativeness often just manifested as some superpower, usually nature-based—they could shapeshift into a coyote or call on some nature element or something, and I was like, 'This Native representation is crap'" (Segal, n.p.). Roanhorse notes that her work posits a response to the erasure of specific cultural origins in much writing about Indigenous characters.

Likewise, Dimaline was particularly forthright about the ideological project she undertook in writing her novel, which she restated outright in response to the commercial and critical success of *The Marrow Thieves*. In conversation with Carla Douglas, Dimaline states that the novel is as much historiography as it is speculative fiction and situates the writing in a specific cultural context; "[S]torytelling is how we've survived genocide. It's how we still have our languages and our ceremonies and our distinct cultures. [. . .] I just wrote a book about the future. What we bring into all our works, no matter what the time frame or subject, is a community-specific worldview and understanding of story" (2017). In this interview, Dimaline notes that the implied audience of her work is other First Nations people, and that even though the book's critical and commercial success enlarged her audience of Canadian and cosmopolitan readers, those subject positions were secondary to the author's imaginative purpose or compositional process. Rather than crafting an allegory oriented upon an audience unfamiliar with the struggles of the Indigenous peoples in the centuries since European invasion of North America, Dimaline's fiction imagines her work in continuity with the narratives written and told by her ancestors.

This comparative analysis of *The Marrow Thieves* with *Thief of Lightning* and *Storm of Locusts* may permit a more nuanced response to the long imagined end to Indigenous communities that forecloses any future often contained in ethnographic fiction. Part of the means by which literal and cultural genocides are carried out is through the production of a colonialist mythology crafted by settlers about vanishing Native peoples. Those colonialist mythologies have become pervasive tropes that locked Indigenous people in a distant historical past. Because the world-building in each novel is anchored in Anishinaabe and Diné cultural traditions, explicating Dimaline's and Roanhorse's work through close reading, contextual analyses of authorial intention, and the application of Native-authored criticism proves essential to fully understanding ways in which their speculations function decolonially.

In *Trail of Lightning*, the first installment in Roanhorse's *Sixth World* series, Magdalena "Maggie" Hoskie, who is both the narrator and the protagonist, tells readers about the cataclysm that isolated the Navajo Nation and killed most of the settlers in North America, the Big Water, after which all lands below 30,000 feet above sea-level are simultaneously flooded. Because of its altitude, the nation of Dinétah has arisen as the only acting state power in what was Utah, Arizona, and New Mexico. Both *Trail of Lightning* and its sequel, *Swarm of Locusts* (2019) follow Maggie as she hunts human and supernatural monsters, using her clan powers, which imbue her with killer instincts and preternatural speed. One of the first things that Maggie tells readers is that "the great joke of the Big Water" is that "the rest of the world may have drowned" after the flood produced by a massive earthquake along the New Madrid fault line, "but Dinétah withers under a record-breaking drought" (Roanhorse, 2018, p. 36). The apocalyptic quake that builds the titular Sixth World is causally linked to the barely fictionalized Energy Wars, preceded in Roanhorse's speculative timeline by the Slaughter of the Plains (2018, p. 22). Maggie explains that "the Slaugh-

ter had ushered in a heyday of energy grabs, the oil companies ripping up sacred groups for their pipelines, the natural gas companies buying up free land for fracking when they could get it, literally shaking the bedrock with their greed" (p. 23). The race between multinationals to profit from the violation of Indigenous peoples' treaty-rights is, of course, not fictional. Attempts by water protectors to keep developers off Lakota and Dakota lands were met with state-sponsored violence from the US federal government in October of 2016 (Elbein, 2017). Additionally, governmental agents from the Bureau of Indian Affairs and Bureau of Land Management illegally leased Pawnee holdings in Oklahoma to fracking companies without prior authorization from or even an informative declaration to the Pawnee Nation a dozen or more times between 2013 and 2018 (Knoblauch, 2018). These, of course, are not the only (or even most egregious) treaty violations to occur in the name of fossil fuels or global commerce, but some of the details of Roanhorse's fictionalized Slaughter and New Madrid super-quake are prescient to present-day Indigenous-led movements to protect land from environmental devastation and economic exploitation.

Trail of Lightning notes that the quake that produced both Big Water and the drought was generated by reckless energy developers, who, along with the federal government, "outlined some plan to dissolve reservation trust land that would open Indian Country to prospectors just like they had during Termination" (Roanhorse, 2018, p. 22). While the Slaughter is fiction, Indian Termination Policies are all too factual (Walch, 1983, p. 1183). The casual invocation of one next to the other in Maggie's narration draws a clear correlation between the historical genocide by legislation to the speculative genocide by federal overreach. Roanhorse describes the Energy Wars in greater detail in her second novel, *Storm of Locusts*. In particular, Maggie's de facto ward, Ben, is the sole survivor of the Little Keystone massacre, which Maggie contextualizes for readers thusly:

> The Protectors' camp housed whole families, sitting
>
> in protest at the site of a proposed pipeline through Osage territory. The Osage and the oil companies were tied up in court, since many of the battles were fought with lawyers and legal briefs as much as they were with guns. But there was a posse of violent men who worked to support the corporations. Those men's souls were as dark and slick as the crude itself, so most folks just called them 'Oilers." The Oilers decided the courts weren't moving fast enough. They took it upon themselves to clear Protector camps by any means necessary. Little Keystone had been one of those.

There are obvious parallels between the assault on the Little Keystone camp and what has been called "The Battle of Treaty Camp" in 2016 at the site of the Dakota Access pipeline on land belonging to the Great Sioux Nation. Over 300 protestors were assaulted by federal, state, and county law enforcement and members of a private security team wielding sonic and water cannons, teargas canisters, rubber rounds, and concussion grenades (Brown et al, 2017). Protestors were then detained in what police body-cameras showed to be modified dog kennels and arraigned on federal charges. Roanhorse's choice to engage directly with the political events of the extratextual present seems to be a nationalist gesture that works to symbolically reaffirm the rights of Indigenous people to sovereign control of lands granted to them by lawful treaties. The use of the modifier "Little" in the fictionalized camp's name seems to also call to mind the Massacre at Little Bighorn, which may be the most widely known historical event to take place on Lakota lands. Roanhorse tacitly draws a direct connection between George Armstrong Custer's attack on the camp at Little Bighorn and the armed raid on Treaty Camp where water protestors were in a standoff with a militarized police force through the insertion of the adjective.

Critical attention is often paid to the cultural contexts of Indigenous literatures, but rarely to the engagement of Indigenous writers with what Kristina Fagan, a Labrador Inuk scholar, has called "specific Political (with a big P) topics within Native literature, such as land ownership, law, and governance" (2004, p. 12). Fagan notes that critics often "tend instead to focus on small-p politics—that is, on power relations—and on largescale issues such as colonization, sexism, and

so forth [which] easily can become vague terms that sidestep the complicated and distinct situations and demands of specific Native groups" because "Native people's specific claims to self-determination, claims that have material consequences" for settlers (p. 13, p. 14). By crafting speculative fiction that forces a confrontation with those material consequences, within the main-text of the narrative, Roanhorse communicates her commitment to centering sovereignty in her storytelling.

Dimaline also seems to demand such an interpretive praxis from readers of *The Marrow Thieves*, which is set in a near-future where the climate has warmed to the extent that most of Canada's arable land has become an uninhabitable swamp. Indigenous characters hide from Euroamerican settlers who, having already seized all reserve lands, now hunt Indigenous people for their bone marrow, which they hope to use to cure a pandemic of dreamlessness decimating Canada's non-Indigenous population. Being unable to dream has left most settlers physically sickly and in a perpetual near-psychotic state. In the literary present of the novel, those scientists have reconstituted the residential school system as a means of tracking and detaining Indigenous people. In spite of their physical ailments, and, perhaps because of their psychological ones, roving bands of armed "Recruiters" hunt Indigenous people to forcibly transport them to the schools. Dimaline's settlers are not literally absent from this fictive world, but they are indistinguishable from one another, and monstrous in ways meant to reflect their poor land stewardship and vicious treatment of their protectorate nations.

Residential schools function in Dimaline's novels similarly to the correlation between the fictionalized Slaughter and the historical Termination in Roanhorse's series. The final residential school was shuttered in 1996, but the legacy of residential schooling of Indigenous People subjugated by the Canadian Commonwealth is relatively recent history. For more than a century and a half, the Canadian government seized and forcibly assimilated approximately 150,000 Indigenous children (*Honoring the Truth*, 2015, p. 38). According to a report by the Canadian Truth and Reconciliation Commission, schools were a means of "cultural genocide" pursued by the state "because it wished to divest itself of its legal and financial obligations to Aboriginal people and gain control over their land and resources. If every Aboriginal person had been 'absorbed into the body politic,' there would be no reserves, no Treaties, and no Aboriginal rights" (2015, p. 3).

The link between those historical schools and the speculations about genocidal settler scientists are drawn clearly for readers of the novel. For example, the novel's primary narrator, Frenchie, recalls his father saying that "the Governor's Committee didn't set up the schools brand new; he says they were based on the old residential school system they used to try to break our people with, way back" (Dimaline, 2017, p. 8). Frenchie also narrates some details about his father's state of mind during the recounting of the schools (*Honoring the Truth,* p. 33). Frenchie's father was "in the gloomy place he went to when he spoke about how the world had changed" and he told his son that he was "lucky [he] didn't remember how it had been, so [he] had less to mourn" (Dimaline, 2017, p. 9). The sense of exile of which Weaver writes is clearly communicated in a way that points to the kind of capital-P Political engagement with the historiographic record of the colonization of the Métis people. Dimaline connects disruptions of family with genocidal attempts to eradicate cultural traditions in order to steal land that rightfully belongs to Métis people.

Because the Indigenous landholdings in Canada are among the first spaces projected to be afflicted by a warming climate and the melting of polar ice caps, the environmental devastation wrought by fossil fuel emissions in the Global North is a direct threat to the continued survival of Indigenous people living in those spaces. In an interview for *Lightspeed*, Dimaline noted that the warming and water-logged landscape of her fiction is drawn from the research about how climate change is likely to change the subartic region surrounding Drummond Island, the pre-relocation home of her own grandparents. The predicted devastation to low-lying areas makes for extended damage that impacts even "developed" urban centers in Ontario.

Decolonial Speculative Fiction, continued

For instance, early in the novel, Frenchie describes the suburban setting en route to the wilderness where he meets Miigwans:

> The sidewalks were shot through with arterial cracks and studded with menacing weeds that had evolved to survive torrential rain and the lack of pollinators. Wildlife was limited to buzzards, raccoons the size of huskies, domestic pets left to run feral and hordes of cockroaches that had regained the ability to fly like their southern cousins. I had been scared of them all when I was still running with my brother. Now, in the wake of his removal, they were nothing. (Dimaline, 2017, pp. 10-11)

The figurative language that Dimaline employs here is telling; her use of the phrase "the wake of his removal" to refer to Frenchie's brother, Mitch, being captured by those Recruiters anchors the fictional trauma in the text to the historical legacy of land theft, which Dimaline remembers happening to her grandparents when Drummond Island was seized.

The implicit capital-P Politics through which critics like Fagan and Weaver encourage readers to interpret the text is communicated by the content and structure of all three novels. Dimaline and Roanhorse write dystopias that weave together keen perceptions of present conditions with narratives grounded in Indigenous cultures and storytelling traditions in order to imagine futures in which refusals of settler prohibitions on sexuality and narrow definitions of kinship became foundational to the organization of community bonds. Many times those prohibitions are implicitly enforced using sexual violence and the pervasive threat thereof. As Qwo-Li Driskill (who describes hirself as a Two-Spirit poet and critic of Cherokee, African, Irish, Lenape, Lumbee, and Osage ascent) has argued that one of the ways in which settler colonialism denies the sovereignty of Indigenous Nations is through imposing heteropatriarchal kinship structures that are normative in colonial cultures upon Indigenous Peoples. Driskill argues that:

> Oppression is used by the 'settlers' to 'tame' our 'wild' and 'savage' understandings of our Selves, to injure our traditional understandings of the world, to pit us against each other along divisions of gender, sexuality, skin tone, geography, 'blood-quantum,' (dis)ability, and class so that the powers that be have less work to do in maintaining control over our homelands, our bodies and our spirits" (2004, p. 57).

Both Dimaline and Roanhorse examine the ways in which intersectional identities inform the building of kinship structures and the relative civility of expressions of desire in their imagined futures. The novels also explicitly acknowledge the ways that sexual violence has been and continues to be used to restrict Indigenous sexual agency, to interrupt the building structures of affinity outside nuclear family units, and to erode community attachments that exist outside the Euroamerican norms.

Dimaline calls attention to the ways in which sexual violence is a pervasive problem for the Indigenous women in her novel. Although most of the events are narrated by Frenchie, occasionally, supporting characters in *The Marrow Thieves* take over during the temporary departures called coming-to stories that describe how the community of Indigenous teenagers comes together. Wab's coming-to story is framed by the intersection of sexual predation and colonial exploitation. In it, she describes the clear cycle of poverty, addiction, and abuse in her family of origin in direct and ordinary language:

> I lived with my mother. She drank. Men came. Men left. One day my older brother Niibin stopped coming home and it was just the two of us—the two of us and revolving parade of men with dirt-stiff jeans and bloodied knuckles. Sometimes they came after me, waking me up from my sleep when they tried to jam their rough hands in my pajamas. Sometimes they got more than just a feel before I could fend them off and lock myself in the bathroom. (Dimaline, 2017, p. 63)

Wab's mother's boyfriends were not the only threats she had to fend off. As her mother's health declines, Wab begins to work as a courier to earn food, which helps her to survive until she is kidnapped and assaulted by a gang of white men who see her as "some squaw bitch" taking business from them (Dimaline, 2017, p. 67). The gang sets Wab up, kidnaps and detains her in a

derelict meat locker for days, where she is repeatedly physically assaulted by a "lineup" that "replenished itself every time it ended." When Wab limps away, now missing an eye and unable to run, she leaves, at first in search of Niibin and ultimately ends up in the care of Miigwans and Minerva. The use of the racial epithet by the redheaded, freckled gang leader indicates to Wab that the assault is punishment for infringing on the gang's market share. In just a few pages, Wab presents a backstory that works as a composite example of the widespread public health crisis that sexual violence has become in Indigenous communities (Deer, 2015, p. xii). As Sarah Deer, a legal scholar of Muskoke heritage, postulates in her 2017 monograph *The Beginning and End of Rape: Confronting Sexual Violence in Native America*, the trauma of colonially imposed rape culture brings has other far-reaching impacts on mental and physical health and on community structures for Indigenous women, who are three times more likely than white women to experience sexual assault (p. ix).

Literary critics have also considered how the imaginative potential of Indigenous literature participates in this process. Sarah Henzi's analysis of rape narratives in Indigenous women's fiction argues that when a piece of literature renders a scene of colonial sexual violence, typically "the rape is staged to represent what sexuality is not about: violence, carnality, and mostly, the highjacking of pleasure and identity" (2015, p. 91). Particular attention ought to be paid to the ways in which "conquest" has sexual layers of connotation in an occupied space, and choosing to show the merging of sexual expression and colonial violence "efaces [the] humanity" of Indigenous survivors. Henzi explains that writers who portray rape in their Nationalist fiction may do so because to "give voice to vulnerability and to sensuality as forms of empowerment rather than as potential loci of violence is thus not only an act of resistance, but one of resurgence" (2015, p. 100). However, only by situating the rape narrative within a context of healthy and positive examples of romantic and familial love that are "culturally appropriate," might writers present a clear didactic purpose to their readers. Henzi suggests that writers invested in personal and political sovereignty make a practice of "telling of uncomfortable stories" because "detached, rational discussions of [the] unembodied" experience of colonization cannot model any real "possibility to create alternative stories" about love, complicity and solidarity (Sium and Ritskes, 2013, p. iv). Wab's childhood sexual trauma and the gang-rape that pushed her out of the urban environment in which she was raised are only a very small part of the character's development in the novel. Wab is not a victim relegated to a minor role in a cautionary tale; she is central to the chosen family that Frenchie joins. Her ability to forge a strong romantic relationship with Chi-Boy seems to tacitly disavow any loss of virtue or status or emotional availability after the sexual violence. She forges close bonds with Minerva, the Anishinaabe elder who helps to lead the group of young people, and is the self-appointed protector of Riri, the youngest member of the group. She not only survives; Wab ensures that others do as well.

Just as Wab's character arc moves from victim of gendered violence to strong protector of her people, so too does Roanhorse's protagonist, Maggie Hoskie. Maggie comes into the clan powers that make her into a deadly Monsterslayer when "bad men" attack her and her grandmother. Maggie's narration notes the phrase "bad men" is "a legal designation, language left over from treaty days that give us the right to hunt monsters, human or otherwise, without authorities getting their panties in a wad if someone ends up dead" though she cannot explain to readers "why the treaty language matters at all when there's no United States left [. . .] and it's not as if the Feds ever held up their side of the treaty anyway" (Roanhorse, 2018, p. 75). By suturing the legacy of broken treaties to the appearance of both supernatural threats and the uncanny means to meet them, Roanhorse evokes a narrative legacy of survivance in much the same way Vizenor argues for. When the "bad men" demand Maggie kill her grandma, she describes hearing a sound or a wind that awakened her by playing a "melody sweet like the taste of blood" that wakes her "from stupor, clears [her] mind in a skull that no longer aches. Strengthens the resolve of a will that was once broken" so that she is able to fight off her attackers after they have murdered her family. She kills four of the band, and meets

Niezghâni, the immortal monster hunter who pursued them to her childhood home.

Rather than coming to stories of the sort that Dimaline builds into *The Marrow Thieves*, in the Sixth World, the appearance of clan powers is a figurative device that both reveals a character's abilities to contribute to their communities but also emerges out of a colonial trauma, as a response to the grief and exile communitism works to heal. Although Maggie describes her clan powers as "born from blood and violence" (Roanhorse, 2018, p. 110), other characters, like Ben and Kai, have nonviolent clan powers that allow them to be stealthy or heal quickly from injuries. Roanhorse's novels recenter narrative attention on surviving and responding to exploitation and violence. Like Wab, Maggie becomes the protector in a family that is organized around affinity and values rather than genetic relationships or social obligations.

Early in *Storm of Locusts,* Hastiin, the leader of the Thirsty Boys, a group of mercenaries Maggie sometimes works with, asks Maggie to mentor to his niece, Ben, just before he is killed while on a mission for the Tribal Council. On their first meeting, Ben immediately discloses to Maggie that she is "keha'atiinii born for Bîîh Dine'é" (14) and her Foot-trails People and Deer People clan powers give her the ability to find people who have been lost or injured and to move silently through even the roughest terrain. These powers prove a potent combination that helped her to survive in the violence of the Fifth World, the present-day. Ben tells Maggie about her own powers manifesting after her grandmother was killed in an accident. Ben feels shame for the ways that her tracking abilities rely on her smelling and tasting the blood of the lost person she's meant to find (Roanhorse, 2019, p. 274). The earlier trauma of her parents' death during the Battle of Little Keystone seems anchored to the emergence of her powers because she tells Maggie that her mother and father "died outside Pawhuska, defending Osage Land" (2019, p. 274) in the same conversation where she explains how her tracking abilities manifested as a kind of post-traumatic stress response to her grandmother's death. The shared experience of trauma and the onset of clan powers proves a powerful bond between Maggie and Ben, in spite of Maggie's initial reservations. Instead of paternalist settler governments and patriarchal households organized only around genetic bonds, Roanhorse's novel depicts a family of affinity bound together through shared values and mutual aid.

Like Ben's story mirrors Maggie's, Roanhorse uses these composite characters to reflect some of the limitations on the sovereignty of Native nations, who cannot adequately prosecute non-Natives who commit violent crimes in tribal jurisdictions, and with the limited resources of the Navajo people in particular. Later in hir article, Driskill notes that "Healing from trauma is intimately joined with decolonization and the reclamation of Indigenous understandings of the world" (2004, p. 225). As Driskill points out, violence and shame are tools of settler colonialism, but exploring the long-term effects they produce—complex, transgenerational trauma—Maggie and Ben work through their shame about the frightening aspects of their clan powers and reflect on how their subject positions as Indigenous women are constrained by the situations in which they find themselves after the Big Water. While their persecution by "bad men" is fictionalized, it is not without context in the present-day Navajo Nation. The only shelter harboring survivors of domestic and sexual assault in the Navajo Nation, which, like fictional Dinétah, spans New Mexico, Utah and Arizona, was permanently closed in 2016, at the same time Roanhorse was composing *Trail of Lightning* (Kaplan, 2016). If not for Maggie's clan powers and the sudden appearance of the immortal Monsterslayer, Neizghânî, the men who broke into Maggie's childhood home and murdered her grandmother may not have been apprehended and would have been at liberty to do further harm to the people of Dinétah.

All of Maggie's narrated recollections of her cohabitation and training with Neizghânî point to a pattern of abuse inside that complicated filial and semi-romantic relationship. Even though he takes her on as his mortal protégé when she is a teenager, there is never any physical affection between them. At the end of the first novel, Grace Goodacre embraces Maggie after she returns with the Goodacre twins in tow. Maggie thinks, "It

sounds pathetic, but I can't actually remember ever being hugged. I'm sure my nalí did, but it was four years ago if it was a day. Neizghânî? That thought makes me laugh" (Roanhorse, 2018, p. 190). In spite of the absence of either paternal or sexual physical contact between Maggie and Neizghânî, most of the people who know about their connection assume that they are romantically involved. For instance, the very first people who hire Maggie to rescue a loved one refer to her as "the girlfriend of the Monsterslayer" in *Trail of Lightning* (Roanhorse, 2018, p. 18). Later in the novel, Maggie agrees to fight Neizghânî in the Shalimar's arena to save Tse Bonita, the largest settlement in Dinétah, from the undead. During that fight, the formal choices that Roanhorse makes reveal the troubling nature of the immortal's feelings of ownership over his protégé. In the moments after the fight begins, Neizghânî slashes and hurls Maggie to the floor of the ring, all the while crooning, "I miss this. I miss you. Come back to me" (Roanhorse, 2018, p. 241). When she refuses, he grapples her down "grinding his weight into [her] pelvis" and threatens that he "could break [her] neck with the turn of [his] wrist" (Roanhorse, 2018, p. 243). Maggie's narration reveals the sexualized nature of his domination of her in the fight:

> His bloody lips are on mine, forcing my mouth open with his tongue as he kisses me. He is rough, brutal and possessive. I taste iron and salt. Holding my throat in his one hand, mouth still on mine, he reaches down with the other hand, wraps his fingers around the hilt of his weapon, and thrusts his lightning blade up under my ribs. Digging for my heart. (2018, p. 244)

Maggie's trauma and her isolation before being abandoned by Neizghânî coupled with this scene's melding of sexual possessiveness and penetrative violence works in similar ways as Wab's coming-to story, in that it highlights how isolation can leave women vulnerable to abuse. This time, rather than being visited upon Indigenous women by outsiders, it is a Holy Person, both outside the community of mortals and within the community of the Diné, who is the threat to her agency. Henzi's points about how sexual and colonial conquest are unified in settler culture work in tandem here with Howe's arguments about shame and trauma. Maggie copes with the loss of her grandmother and works through the grief and shame and isolation brought about by her abusive relationship to Neizghânî by building community and working hard to serve the other people in her chosen family. She is able, in the two novels, to successfully build more healthy connections with characters like Haastin, Kai and Tah. In fact, she is only able to temporarily bind and bury Neizghânî through an alliance with that new chosen family in coalition with the Goodacres and the Thirsty Boys.

The capital-P Politics in *The Marrow Thieves* is not focused on community services for survivors of sexual and domestic violence, but Dimaline does make use of Recruiters as the monstrous representative of the colonial state, and they seem to haunt the edges of every chapter of the novel as specters pursuing Indigenous characters. Dimaline imbues her antagonists with a kind of cunning that attempts to exploit the sorts of families of affinity that bring Frenchie and the other young people together—like Neizghânî, they do not seem to be outsiders or "bad men," but looks are quite deceiving here. The counterpoint to male violence in *The Marrow Thieves* is not intragenerational and familial bonding between women, but does work to push back against settler heteropatriachy in other, even more radical ways.

Dimaline's novel features two men—Miigwans, the Anishinaabe man who works with Minvera to help Frenchie and the others, and his Cree husband Isaac, who together embody the active formation of identity and community through the kinship structures they create and lead. Dimaline's characterization of Miigwans' marriage to Isaac is an important reclamation of the same sex desire in much the same way that Driskill says Indigenous LGBTQ and Two Spirit People seek to do. The circumstances of Isaac's capture serve as a critique of colonial violence in ways that illustrate this communitist approach to healing. The story is elliptically revealed in terse snippets of dialogue between Miigwans and Frenchie, which are dispersed throughout the first half of novel. *The Marrow Thieves* thus makes use of a cyclical structure of biographical storytelling found in many Anishinaabe stories (Henzi, 2015, 93). Because Dimaline is a Métis writer, this choice has

particular import for how critics might interpret coming-to stories narrated by those characters other than Frenchie. The structure itself is a communitist form, which seems to highlight the impossibility of telling one family member's story without invoking the context of all the stories of all the other members of that family. The ordering of the stories forms a radical genealogy that is about trust and shared values, which makes it significant that at the novel's literal center is a chapter called "Miigwans' Coming to Story," where Miig talks not about his childhood, but the life of his lost husband, Isaac, who he describes as "a pale, green-eyed half-breed poet" who:

> ...didn't have grandparents who'd told residential school stories like campfire tales to scare you into acting right, stories about men and women who promised themselves to God only and then took whatever they wanted from the children, especially at night. Stories about a book that was like a vacuum, used to suck the language right out of your lungs. (Dimaline, 2017, p. 107)

Because Isaac's family passes for white before the plague, his family history is less marked by the trauma of residential schooling than Miigwans's family, which allows Isaac to retain so much of his Indigenous language that he dreams in Nehiyawok.

According to Miigwans, this means that Isaac was raised without sufficient terror of settlers and remains "too cautiously hopeful" (Dimaline, 2017, p. 79). Isaac's faith in the virtue of all Indigenous People proves to be his family's undoing. While hunting in the forest, the two men find a group of three strangers who speak Anishinaabe poorly and whom Miigwans describes as "dark" and looking "more plains than northern" (Dimaline, 2017, p. 80). Miigwans argues that they should either hide or kill the strangers, but Isaac insists on feeding them, taking them in, and seeing to their injuries as Cree custom dictates. One of the strangers is an American Anishinaabe captive wearing a tracking devise and the others are not First Nations at all, but Pinay, which Miigwans discovers when he hears them speak to one another in Tagalog. The couple are forced to abandon their cabin and run from the Recruiters who are using the strangers as bait. In the ensuing flight, Isaac is captured and taken to a school.

Miigwans tells the story to Frenchie and the other "strays" as a parable of suspicion. However, closer reading of the text with Dimaline's statements in mind may reveal a subtextual insight about the dangers of accepting racialized readings of bodies that attempt to inscribe Indigeneity in skin tone, eye color, modes of dress, or hairstyle. Isaac, who could pass for white, best upholds the Cree Nations' principles for dealing with visitors, and the strangers, who pass for Native but are impostors, exemplify the dangers of accepting the racial scripts of settler culture. In spite of the fact that Miigwans tells this story to point out the dangers of Isaac's "soft spot for strays" (Dimaline, 2017, p. 79), readers know that Miigwans travels with a party of lost Anishinaabe children and an Anishinaabe Elder named Minerva, all of whom he struggles to keep safe from Recruiters. The familial band seems to be an overt call to the communitist advocacy for and inclusion of those who are most vulnerable to dispossession and exile. In fact, the next piece of dialogue Miigwans speaks after the narration shifts away from his first-person recounting of Isaac's recruitment to Frenchie's perspective is "Sometimes, you gotta trust that people are making decisions for the better of the community based on things they know that you don't" (Dimaline, 2017, p. 85). The truth of this statement is born out in council, when the Anishinaabe, Salish, Haudenosaunee, Migmaw, Ho-Chunk, and Cree agree to work together to liberate one school and prevent the construction of another (Dimaline, 2017, p. 130). By acting together in a pan-National council, the characters are able to both honor their own specific traditions and to build a coalition that avoids the banality and small-p political action that Weaver and Fagan critique. Dimaline's plot seems to advocate for taking back land and repudiating residential schooling via collective direct action. In the aftermath of that fictionalized direct action, the lost Isaac is finally reunited with an embattled Miigwans, which is the culminating moment in the plot's communitist future forecast at the end of *The Marrow Thieves*.

Driskill writes that "[a] colonized sexuality is one in which [Indigenous Peoples] have internalized the sex-

ual values of a dominant culture" and that in order "[t]o decolonize our sexualities [. . .], we must begin tending to the open wounds colonization leaves in our flesh" (2004, p. 60). Dimaline's main plot is resolved not by the reunion of Frenchie and his father, but by the reunion between Miigwans and Isaac as the culminating event of the novel. In in the larger scope of the novel, the mixed-Nation, same-sex pairing of Isaac and Miigwans is essential to the creation of a larger community of Cree and Anishinaabe fugitives that hope to stop the building of a new school in the north. Miigwans survives after Isaac's recruitment because he is taken in by a Cree family that helped put him in touch with some "small pockets of Anishinaabe still huddled around here and there" (Dimaline, 2017, p. 109). Miig tells Frenchie that he worked with both the Cree and the Anishinaabe to set up the council and even traded for the rifle he carries by leading people to the Northern camp (Dimaline, 2017, p. 110). Without the shared cultural context of his own upbringing and what he learned in his relationship with Isaac, Miigwans may have been unable to find safety and help broker that alliance between nations that provides hope of active resistance in the final pages of *The Marrow Thieves*. Miigwans and Isaac's pairing helps Dimaline to posit a critique of the heterocentricity of settler's cultural notions of kinship and limitations of embodied desire. The thematic speculation about the future intersections of Anishinaabe history and Euroamerican supremacist ideology includes the experiences of two Indigenous men that reject a binary narrative about gender, sex, and sexuality in favor of an enlarged sense of personal, communal, and cultural obligations that align with her stated purpose in publishing *The Marrow Thieves*. The coalition of bands successfully disrupts the construction of the school, but at great cost. Minerva is missing, and a few members of the Council's fighting bands are killed. Against all odds, one of very few survivors to return to the makeshift camp from Recruiter custody with some marrow left is Isaac. Frenchie narrates of their reunion at the hopeful close of the novel:

> I watched the steps that pulled Isaac, the man who dreamed in Cree, home to his love. The love who'd carried him against the rib and breath and hurt of his chest as ceremony in a glass vial. And I understood that as long as there are dreamers left, there will never be want for a dream. And I understood just what we would do for each other, just what we would do for the ebb and pull of the dream, the bigger dream that held us all. Anything. Everything. (Dimaline, 2017, pp. 230-1)

There can be no neat resolution that undoes settler colonialism in *The Marrow Thieves*. One school is destroyed. Others remain. Recruiters still hunt First Nations people, who still live in the ragged northmost remnants of their ancestral lands, stolen by broken treaties and the violence of settler colonialism. What Dimaline promises readers in the final reunion between the two men, one who cares for a band of young people committed to enacting change, and the other who carries the language and stories of his people in his subconscious where they cannot ever be stolen, is that so long as there are Indigenous people telling Indigenous stories, the Indigenous nations to which those people and stories belong cannot vanish and will survive.

Because *The Sixth World* is an ongoing series, it is difficult to say what the end of Roanhorse's narrative will reveal about the decolonial project she describes in interviews and expository prose. However, it is clear that in *The Sixth World* the chosen family is as important as the nuclear units that are the basis of cosmopolitan narratives about family.

The decolonial apocalyptic setting of both *The Marrow Thieves* and *The Sixth World* mean that more characters are orphaned than are firmly situated in familial union. This is particularly true of both Maggie and Ben. The chain of guardianship that situates Ben in a familial arrangement with Maggie, Tah, and Kai works as an allegory of a Diné story about the first Navajo people's struggles to find domestic happiness, by which the shared duties of childrearing unify early Diné communities. An ethnographic version of the story reported by Washington Matthews in 1897 notes that the first born children of First Man and First Woman were "hermaphrodite twins" who came before First Woman bore four more pairs of opposite sex twins, "and all except the first became couples who had children" (Erdoes and Ortiz, 1984, p. 40). A note at the end of the story

from the ethnographer reads, "It is very common in origin stories around the world for the first people to be hermaphrodites or bisexuals. Religious scholars have been trying for years to find an explanation, but have not succeeded" (Erdoes and Ortiz, 1984, p. 41). However, in a recent article about how Two-Spirit Diné people struggle for access to gender-affirming ceremony in *High Country News*, Navajo journalist Jolene Yazzie seems to have found at least one explanation. Yazzie argues that the Navajo have "a tradition that recognizes multiple gender roles" making the words "hermaphrodite" and "bisexuals" perhaps a poor fit for the original cultural context. Yazzie summarizes that story thusly:

> All [genders] come from the Diné creation story, in which *asdzáán* and *hastiin*, a cisgender married couple, were not getting along and separated. When that happened, *dilbaa* and *náhleeh* emerged from hiding and were seen as a special group that could perform the duties of both women and men, stepping into the vacated partner roles. They were accepted by *asdzáán* and *hastiin*, who realized their survival depended on them. (2020)

Although not all Diné people agree with Yazzie's explication of the story as an endorsement of Two-Spirit identity within Navajo traditions, the fact that the uncle who delivers Ben into Maggie's custody is named Hastiin seems to indicate that Roanhorse was considering the way the story imagines Diné families outside of the heteropatriarchal nuclear unit centered in settler literatures.

This is not the only way in which Ben's position in the narrative disrupts heteropatriarchy. Upon first meeting Ben, Maggie believes her to be male, noting the close family resemblance between Hastiin and Ben (Roanhorse, 2018, p. 8). Ben's mode of dress may be a symbol for the fluidity of her gender; she enters the story in androgynous blue fatigues, the uniform of the Thirsty Boys, an all-male mercenary group lead by her uncle (Roanhorse, 2018, p. 9). Later, she's kidnapped by human traffickers who run Knifetown, a settlement in a cave outside the wall around Dinétah. When Ben and Maggie find one another finally, Ben is dressed in a wedding gown because she was to be auctioned off as a child bride. Maggie observes that Ben "looks like "someone's sick version of a doll" (Roanhorse, 2018, p. 168). Although she ditches the make-up almost immediately, Ben continues to wear the dress, which accounts for her princess-like appearance in Tommy Arnold's paperback cover and dust-jacket illustration for the second novel in the series. Even that heavily gendered piece of costuming is complicated in Arnold's rendering. She wears a puffy-sleeved confection with an automatic rifle stacked with a high capacity magazine slung over her shoulder. When encouraged to choose her own clothing, Ben opts for the same ensemble that Maggie wears—ragged tee shirts and worn in leggings—but with a pair of boots rather than moccasins (Roanhorse, 2018, p. 49). Even beyond the sartorial symbols of Ben's fluid gender, her sexuality is marked as explicitly outside the bounds of settler prohibitions against same-sex desire. Ben seems to embody some of the features associated with the Diné role of the Nádleeh Asdzaa, a woman who partners with other women. In *Swarm of Locusts*, Ben will adopt the ethnographic simplication of that moniker when she tells Maggie, "I'm bi, but usually I don't go for boys. Too much ego, if you know what I mean" (Roanhorse, 2019, p. 68). There's no rebuke or judgment in Maggie's narrative and her strong feelings of responsibility for Ben are confirmed by the way the penultimate scene of the second novel, which finds Ben cooking dinner for Maggie and their family of affinity on Keshmish, as Maggie proclaims, "For once, I think I'm okay" (Roanhorse, 2019, p. 311).

In addition to the historical narratives about Diné and Anishinaabe peoples and the Indigenous Futurist narratives which reimagine community and family outside of a colonial context, it may be that Roanhorse and Dimaline also speculate about the future of Native and First Nations lands, cultures, peoples and families as a way to tacitly ask readers to consider the epistemologies through which they think they have come to know Diné and Anishinaabe culture. Roanhorse's fiction proves that "the past is [. . .] folded into the present, which is folded into the future—a philosophical wormhole that renders the very definitions of time and space fluid in the imagination" ("Postcards from the Apocalypse"), and Dimaline's fiction underscores the

ways in which storytelling is a means to "survive genocide" (Douglas, 2017). By investigating the potential meanings and structures available for the expression of romantic attachment, sexual desire, and familial kinships available in a decolonized space, Roanhorse's and Demaline's thematic speculation about the future intersections of Diné and Anishinaabe history with European supremacist ideology includes and even centers the experiences of Indigenous characters that reject heteropatriarchal colonialist narratives about nature and culture in favor of Nationalist narratives.

Notes

[1]I am aware of the allegations of ethnic fraud and cultural appropriation presented against Rebecca Roanhorse, even though this project began in late 2018, before they were made. While I understand that the allegations are serious, I have some qualms about entering into the debate about Roanhorse's tribal enrollment or about whether or not it is appropriate for her to use stories and Holy People from her husband's and daughter's culture in her fiction. First, because I am not a member of the Ohkay Owinghe or Navajo Nations, it seems to me that my perspectives on debates about in-group gatekeeping and secret sharing are unlikely to productively contribute to that conversation. In fact, the one thing I am certain of is that readers, thinkers, scholars, and critics inside those communities are the only people who can say what its boundaries are. Secondly, nothing about my education or experience prepares me to compellingly argue for or against the claims made about the inauthenticity of Roanhorse's writing and autobiography. Even if I were able to bracket my outsider status so as to objectively weigh the arguments on both sides of this controversy using only my academic training, doing so would require a good deal of scholarship about the history of Spanish and American colonization. It would take years and many, many articles to even begin to understand and communicate the context of transcultural exchange, enrollment barriers, and blood quantum policies necessary to do even a cursory fact-check of Roanhorse's biographical claims. I suspect that even after years of study, any conclusions I might be able to support would also require additional contextualizing, given the historical legacies of anti-Blackness in Navajo or Pueblo communities. The paratextual concerns would certainly strain the boundaries of this issue of The *Journal of Science Fiction* and of my expertise. I am a literary critic, so all I can make salient commentary upon is the text of Roanhorse's novels, which I found to do a great deal of potentially useful imaginative work, as described above.

Decolonial Speculative Fiction, continued

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JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

Ecological Science Fiction with Chinese Characteristics: *The Three-Body Problem*

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Abstract: When Liu Cixin presented his *The Three-Body Problem* as hard science fiction without any political agenda, most critics accepted the author's assessment, even though he decided to bury the account of the Cultural Revolution which opens the American edition in a later chapter in the Chinese version. Related to this content, yet arguably even more sensitive, is the book's account of China's treatment of its natural environment. In this essay, I connect the discourses of science fiction, ecocriticism, and ecological science fiction, and argue that Liu's novel can be read as a bold intervention into the complex relationship between science, environmentalism, and literature in China. By combining conventional science fiction tropes such as alien invasion scenarios with its author's special talent for large-scale universe-spanning analogies, *The Three-Body Problem*, not unlike the virtual-reality simulation at its core, creates a realm in which ecological concepts such as ecocentrism, endangered species, and the climate crisis can be taken to their extreme, while remaining sufficiently ambiguous to be safely consumed by science fiction fans in China and the West alike.

Keywords: *Liu Cixin; The Three-Body Problem; Chinese science fiction; Chinese ecocriticism; ecological science fiction*

Liu Cixin's best-selling 2008 science fiction novel, *The Three-Body Problem* (sān tǐ 三体), takes its name from the notoriously knotty conundrum in celestial mechanics of "ascertaining the movements of three particles attracting one another under the law of gravitation" (Oxford University Press, 2019). Trying to find a suitable approach to Liu's text that manages to encompass its many potential access points represents a three-body problem in itself, for the novel stands at a nexus of three potential critical discourses: Chinese science fiction studies, ecological science fiction, and Chinese ecocriticism. We can read *The Three-Body Problem* as science fiction, specifically hard SF—what Liu himself thinks of as "pure sf" (Li, 2019, p. 6) or "science fiction in the classic sense" (Liu, 2013, p. 31). The book also lends itself to a reading as ecological science fiction, which seeks to explore the ecological implications of the realization provided by "the 'Pale Blue Dot' photograph taken by the space probe *Voyager 1* in 1990, in which a six-billion-kilometer-distant Earth is but a single pixel, barely visible against a field of total darkness," as Gerry Canavan writes (Canavan and Robinson, 2014, p. 8). Novels like *The Three-Body Problem*, parts of which offer a perspective on our planet from four light-years away—more than six thousand times the distance of *Voyager 1* at the time of the Pale Blue Dot Picture—offer a humbling sense of our cosmic insignificance. As Canavan puts it: "*we are all one species on this pale blue dot*" (Canavan and Robinson, 2014, p. 8). That many other species are critically endangered is well known, not least in China, whose environment has long borne the brunt of rapid industrial development, and whose economic growth is an important contributor to the climate crisis. By combining the critical discourses of Chinese science fiction, ecological science fiction, and Chinese ecocriticism, this analysis of Liu Cixin's *The Three-Body Problem* will show how the novel combines science fiction with an awareness of China's special role in the health of our planet and the survival of our civilization.

Science Fiction and the Species Perspective on the Environmental Crisis

One recurring idea in Dipesh Chakrabarty's influential essay, "The Climate of History: Four Theses" (2009) is that humans only think of themselves as members of nations or classes: "We humans never experience ourselves as a species" (p. 220), he laments. He concludes that "[s]pecies may indeed be the name of a placeholder for an emergent, new universal history of humans that flashes up in the moment of the danger that is climate change" (p. 221). Chakravarty's species-oriented approach to historiography is but one reflection of the ongoing attempt in several disciplines to do justice to climate change and the global environmental crisis.

Amitav Ghosh, whose novel, *The Hungry Tide* (2004) offers a vivid depiction of extreme weather and its impact on the human and animal population of the Sundarbans, has addressed the failure of much of literary fiction to find the right form for representing climate change in *The Great Derangement*: "for let us make no mistake: the climate crisis is also a crisis of culture, and thus of the imagination" (Ghosh, 2017, p. 9). Rob Nixon grapples with some of the same questions about how to represent an event in literature that is as complex and comprehensive, but also as slow and undramatic, as climate change: "How do we bring home—and bring emotionally to life—threats that take time to wreak their havoc, threats that never materialize in one spectacular, explosive, cinematic scene?" (Nixon, 2011, p. 14).

One obvious answer to the problem of how to represent ecological challenges of global significance in literature with a degree of scientific plausibility is of course the genre of science fiction (henceforth SF), even if that genre has been largely excluded from "the mansion of serious fiction" (Ghosh, 2017, p. 66), as Ghosh puts it in *The Great Derangement*.

Kim Stanley Robinson argues in *Green Planets* that "we are now living in a science fiction novel that we are all writing together" (Canavan and Robinson, 2014, p. 255). His co-editor explains the usefulness of the SF genre beyond its obvious entertainment value:

> The alienated view-from-outside offered by cognitive estrangement allows us to examine ourselves and our institutions in new (and rarely flattering) light; SF distances us from the contemporary world-system only to return us to it, as aliens, so that we can see it with fresh eyes. (Canavan and Robinson, 2014, p. xi)

In this sense, SF offers a heightened dose of the defamiliarization which Russian formalists identified as a key effect in literary texts. Precisely because the environmental challenges our planet is facing in the age of climate change transcend the temporal and spatial boundaries of many other literary genres, including the human dimensions of realist fiction, SF is arguably an ideal form for ecocriticism.

The Three-Body Problem and the Politics of Ecological Science Fiction

While Mao Zedong claimed to be fond of literary writers like Lu Xun, whom he dubbed "a Chinese sage of the first order" (Davies, 2013, p. 6), he could be harshly dismissive of writing, or indeed any kind of aesthetic pursuit, at other times: "A revolution is not a dinner party, or writing an essay, or painting a picture, or doing embroidery..." (Mao, 1967, p. 23). Despite Mao's assurance elsewhere that "[t]he Communist Party does not fear criticism" (p. 485), such strident tones may explain why critical writing, in whatever form, has rarely been a risk-free pursuit in China. This was the case in the early twentieth century, when Lu Xun pioneered the use of modern Chinese in literary writing, which accounted for the importance of his work to the anti-traditional May Fourth Movement. As Liu's novel itself illustrates, the production, dissemination and consumption of literature, including both fiction and nonfiction, was fraught with danger during the 1966-76 Great Proletarian Cultural Revolution (which Liu's novel revisits). Even in the comparatively more liberal, recent times, the treatment of literary critic, activist, and author Liu Xiaobo, who received the 2010 Nobel Peace Prize while in prison in China for "inciting subversion" by co-authoring a manifesto (https://www.hrw.org/tag/liu-xiaobo) serves as a stark reminder of the importance of literature in contemporary China.

Could this be why Liu Cixin goes out of his way to disavow any political intentions? In the afterword he wrote for the American edition of *The Three-Body Problem*, he claims that "[a]s a science fiction writer who began as a fan, I do not use my fiction as a disguised way to criticize the reality of the present" (Liu, 2014, p. 393). Apart from the nonsequitous connection between SF fandom and a reluctance to criticize, we may even ask whether the gentleman doth protest too much: whom is he trying to persuade here? On the other hand, it would be unfair to put Liu into the Freudian double bind of either being political or in denial. Quite apart from the author's intentions, it is remarkable to what degree critics have accepted his self-assessment. For example, Alec Ash (2017) opens his article on the Chinese SF boom with Liu's best-selling trilogy

but quickly dismisses his work in favor of edgier fare: "But whereas Liu, 53, writes about aliens, physics and man's place among the stars—traditional science-fiction concerns—a new generation of Chinese writers is experimenting with the genre as a way to discuss the realities of 21st-century China." Academic critics largely agree, such as Mingwei Song (2015), who contrasts Liu with his contemporaries, suggesting that he "appears to be the least influenced by Chinese politics" (p. 95). Gwennaël Gaffric (2019; who also happens to be the novel's French translator) poses a crucial question: "Do Liu Cixin's novels stand out for their lack of a clear political stance or for their acquiesence [*sic*] to authority, thus earning him the title of standard-bearer for the culturalist/nationalist project?" (p. 30). Although the book's commercial success has inevitably been interpreted by official media as "the triumph of a nation" (Gaffric, 2019, p. 27), Gaffric ultimately rejects reading the trilogy too politically: "it seems shallow to project some sort of political commitment regarding the regime onto it" (p. 31).

Even without ascribing a specific political agenda to Liu and his book, however, it is worth remembering that to write SF in China has rarely been a completely unpolitical undertaking. As Han Song (2013) writes in his contribution to a *Science Fiction Studies* special issue on Chinese SF, during the Cultural Revolution, "the genre was regarded as something from corrupt Western culture that could lead people astray" (p. 16), and as late as 1983, Party newspapers criticized SF for "spreading pseudoscience and promoting decadent capitalist elements" (p. 16). Only recently did Chinese censors "ban time-travel narratives in TV dramas, claiming that they showed lack of respect for Chinese history and would mislead young people" (p. 21).

More specifically regarding *The Three-Body Problem*, any reader trying to form an opinion on the novel's political content based on the English version translated by the Chinese-American writer Ken Liu (no relation) will find that while his translation begins with three harrowing chapters set during the Cultural Revolution, the Chinese edition buries this material in a later chapter and instead opens more like a Crichtonesque techno-thriller. As a matter of fact, when the Chinese original was first serialized in *Science Fiction World* (kēhuàn shìjiè 科幻世界) in 2006, the story also began with the Cultural Revolution (MingweiSong, 2015, p. 10). However, as translator Ken Liu delicately puts it, Liu Cixin "had switched the order only because of concern about whether or not that content would be sensitive" (Pandell, 2016). So even though the book treats the Cultural Revolution as "The Madness Years" (*fēngkuáng niándài* 疯狂年代) safely left behind, suggesting that, unlike the fictional astrophysicist Ye Wenjie in 1971, no one writing today would have to be concerned about the "political symbolism" of "aim[ing] a superpowerful radio beam at the red sun" (p. 264), the subject was still sensitive enough to shoehorn the chapters into a discussion between a nanomaterials researcher and an astronomer in the form of "throwaway flashback exclamations" (Pandell).[1]

Liu Cixin, a computer engineer, "grew up reading Jules Verne and Arthur C. Clarke" (Han Song, 2013, p. 17)[2] and considers his own work "a clumsy imitation" of Clarke (Qin, 2014). In his contribution to the aforementioned special issue of *Science Fiction Studies*, he calls himself "an sf fan and literary layperson" (Liu, 2013, p. 31), and in an interview with Ken Liu, he humbly mentions his novel's "obvious literary flaws" (Liu, 2015, p. 25). His fellow writer Jia Liyuan pays him the backhanded compliment of never having "entangled himself with any so-called literary techniques" (Jia, 2018, p. 60).

I argue that in spite of Liu Cixin's protestations of artlessness and his politically prudent assertions of being an unpolitical writer, his novel has both more political depth and more aesthetic sophistication than its author appears inclined to claim. We would do well to remember Orwell's maxim that "[t]he opinion that art should have nothing to do with politics is itself a political attitude" (Orwell, p. 1083). Certainly some critics could not help but read parts of *The Three-Body Problem* as, at the very least, a science-fictionalized representation of the Cultural Revolution years—as *Der Spiegel* described the novel's juxtaposition of state surveillance and alien communication, "*The Lives of Others* meets *Contact*" (Kalkhof, 2016).[3]

We know something about the author's personal

perspective on the Cultural Revolution from his postscript to the American edition. At the time of the events, Liu was a small child and had been sent to live in his ancestral village in Henan while his parents worked at a coal mine in Shanxi Province that had become "a combat zone for the factional civil wars of the Cultural Revolution" (Whereas the English translation of the novel consists of three parts (subdivided into 35 chapters), the Chinese version contains 36 chapters which are not grouped into parts. Unless stated otherwise, all quotations from the novel refer to the English edition). (Liu, 2014, p. 392).

But what about that sensitive material about the time which comprises Part I (chapters 1-3) of the English translation of the novel?[4] The novel begins with glimpses of the chaos and violence that are commonly associated with the period. Apart from the vicious battles between rival Red Guards, Liu depicts a Tsinghua University "struggle session" (p. 11) at which Ye Zhetai, a distinguished physics professor, gets humiliated and ultimately murdered for crimes such as "add[ing] relativity to the intro physics course" (p. 14) and teaching his students "the reactionary Copenhagen interpretation of quantum mechanics" (p. 17). This is a stark illustration of the Cultural Revolution's thoroughgoing politicization of science. When Ye has the audacity to ask, "Should philosophy guide experiments, or should experiments guide philosophy?" the Red Guards reply that "[o]f course it should be the correct philosophy of Marxism that guides scientific experiments" (p. 17). It is precisely the beleaguered professor's command of Marxist doctrine that enrages the Red Guards so much that even the reminder that Mao himself "instructed us to 'rely on eloquence rather than violence'" (p. 19) does not save his life. With this episode, Liu demonstrates that not only art and literature but science itself can be political, which further undermines his own declared intention of being an unpretentious SF writer uninterested in politics.

The remainder of the novel is replete with echoes of and parallels to the Cultural Revolution. When the murdered physicist's daughter Ye Wenjie has an opportunity to read about the pesticides in *Silent Spring*, "Carson's book allowed Ye to see that, from Nature's perspective, their use was indistinguishable from the Cultural Revolution, and equally destructive to our world" (p. 27). In this passage, Liu compares the cultural devastation wrought by the Cultural Revolution to the environmental devastation resulting from the use of pesticides like DDT. Given this explicit analogy, it is not very surprising that the novel contains other reflections on the Cultural Revolution, large and small. Indeed, Liu writes in his postscript about recognizing his "special talent: Scales and existences that far exceeded the bounds of human sensory perception—both macro and micro—and that seemed to be only abstract numbers to others, could take on concrete forms in my mind" (Liu, 2014, p. 393). This can be seen in the following simile which bespeaks the author's former day job as a computer engineer: "Battles like this one raged across Beijing like a multitude of CPUs working in parallel, their combined output, the Cultural Revolution" (Liu, 2014, p. 11). Elsewhere, the Cultural Revolution is used as imagery, as when the novel compares the struggles among the different factions of the Earth-Trisolaris Organization to a "civil war" (Liu, 2014, p. 321). In both examples, Liu is using poetic devices to point out an analogy between something big (large-scale battles) and something comparably smaller (electronic circuitry or small-scale scuffles). Such literary tools may be especially useful for a SF writer who wants to look at the biggest possible picture and, so to speak, put humanity in its place.

Liu has written about the life-changing impact of reading Arthur C. Clarke's *2001: A Space Odyssey* (Liu, 2013,), which impressed upon him the SF genre's power to transcend what he considers the "intense anthropocentric narcissism" (p. 22) of conventional literature by zooming out, focusing on what he calls "macro-details" (p. 25), and taking the very long view. Of course, such an appeal to literature's shortcomings is by no means new—in fact, it is one of the key aspects of ecocriticism, as the title of David Ehrenfeld's 1978 contribution to that field (*The Arrogance of Humanism*) illustrates.

Liu's repeated use of analogies, correspondences, and references to scale is also illustrated by the reply that his protagonist, a nanomaterials researcher

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called Wang Miao, receives when he points out the relative slowness of the Trisolaran Interstellar Fleet that seeks to conquer our planet: "The journey of a thousand miles begins with the first step" (Liu, 2014, p. 244; "千里之行始于足下" [qiānlǐ zhī xíng shǐ yú zúxià]; Liu, 2008, p. 183). It seems safe to assume that most Chinese readers would have been familiar with the proverb, which appears in the Daodejing (cf. Hinton, 2015, p. 102). It is also quite possible that many of them would have been encouraged to read *The Three-Body Problem* through the environmentalist lens offered by the Way. As James Miller puts it, "Dao is no more—and no less —than the flourishing of nature itself" (Miller, 2003). While this is not to say that Liu intentionally gave his novel such an ecological subtext (to the extent that intention is at issue), the poetic resonance achieved through his use of figurative language is strikingly reminiscent of the Daoist resonance between the macrocosmos of the natural world and the microcosmos of the human body (Weller, 2006, p. 25).

In the context of zooming out to the biggest picture, it is worth noting that another major character, the police officer Shi Qiang who investigates the human conspiracy that welcomes the anticipated alien invasion, is generally known by the nickname Da Shi (大史 dà shǐ), or "Big Shi." And 史(shǐ) is indeed a common Chinese surname, one of the lǎobǎixìng (老百姓; "old hundred surnames"), in fact, an expression to describe the common people.[5] But the character 史(shǐ) can also mean "history," although the Chinese word for the academic discipline History requires a second character: 历史 lìshǐ. Still, a loose translation of the detective's name might render "Big History," suggesting the multidisciplinary, macrohistorical writing pioneered by David Christian also practiced, on a somewhat smaller scale, by Jared Diamond.

Thus Liu's Da Shi serves several purposes: Not only does this rough-talking, *baijiu*-swilling sleuth stand in contrast to the novel's many scientists, his visceral rejection of any intellectual philosophizing ("Look down my throat and you can see out my ass."; Liu, 2014, pp. 132-33) also represents an internal line of defense against the kind of political interpretations of his work against which the author appears so averse. And yet the kind of extreme-scale perspective suggested by his nickname violates the very common sense he recommends. As General Chang, Da Shi's boss, puts it:

> Yes, the entire history of humankind has been fortunate. From the Stone Age till now, no real crisis has occurred. We've been very lucky. But if it's all luck, then it has to end one day. Let me tell you: It's ended. Prepare for the worst. (Liu, 2014, p. 65)

What could possibly lead to such an inhuman, or antihuman, outlook? Translator Ken Liu suggested the following:

> two historical events Liu Cixin could think of that would cause somebody to be so utterly disappointed by human nature that Ye's willing to trust a higher power from outside to redeem humanity: The Holocaust and the Cultural Revolution. (Pandell, 2016)

Compared to the Big Bang and the ultimate fate of the universe, whether it comes in the form of a Big Freeze, Big Rip, or Big Crunch, "minor" blips like the Holocaust or the Cultural Revolution, let alone a single human being's suffering, must of necessity seem inconsequential.

And so Ye Wenjie, the astrophysicist whose father was murdered by Red Guards, does not follow the advice of her Alpha Centaurian correspondent ("Do not answer!!!", Liu, 2014, p. 272) but replies with a cordial invitation: "*Come here! I will help you conquer this world. Our civilization is no longer capable of solving its own problems. We need your force to intervene"* (p. 276). One shudders to think what kind of "solution" for her civilization Ye has in mind. In any case, the novel's final words suggest that she regards her own fate and that of the rest of her species as intrinsically connected: "'My sunset,' Ye whispered. 'And sunset for humanity'" (p. 390).

Wang Miao, one of the characters involved in infiltrating a secret society of human traitors actively working to facilitate an alien takeover of Earth, experiences his own existential crisis. When he observes a sudden flickering in the cosmic microwave background radiation that translates into a countdown "at the scale of the universe" (Liu, 2014, p. 124), Wang puzzles over its

meaning. His speculation ranges from his own death to "the end of the whole world" (p. 128). It is at this point that Da Shi invites him to a meal of quick-fried tripe with a bottle of *erguotou*, during which he demonstrates his (and Liu's) "talent for connecting the dots" (p. 135). His explanation for the observations that have driven scientists like Wang Miao to despair: "Everything that's happening is coordinated by someone behind the scenes with one goal: to completely ruin scientific research" (p. 135)—an eerie and ironic echo of the critique of SF by Qian Xuesen (the father of China's space program) in 1983 on the grounds that it was "contributing to an increasing loss of faith in science among readers" (Gaffric, 2019, p. 25).

Some interpretations of Liu's trilogy do appear farfetched, such as those that "interpret the battle of civilizations depicted in the series as an allegory for the ruthless competition in the nation's Internet industry" (Qin, 2014). Nevertheless, as mentioned above, *The Three-Body Problem* does invite metaphorical readings, and the alternating stable and chaotic eras that characterize Liu's fictitious Trisolaran civilization are reminiscent of Chinese history, with its occasionally dizzying succession of Warring States and Three Kingdoms and myriad dynasties. The tri-solar syzygy that heralds the end of a stable era might symbolize the disagreeable choice between two similarly destructive models of becoming rich (market-driven or state-driven capitalism) and the equally unattractive option of condemning much of humanity to poverty. Alternatively, "chaotic eras" might represent the chaos of Western democracy against which China's official media likes to warn and which they compare unfavorably to the stability only the Chinese Communist Party can ensure.

Translator Ken Liu himself suggested "that the Cultural Revolution, in some ways, is an instance of a Chaotic Era. I read the whole Trisolaran cycle of Chaotic Periods and Stable Eras as mirroring our own history" (Pandell, 2016). The rotating stable and chaotic eras, symbolized in the novel by giant pendulums, are particularly prominent in the chapters taking place within the virtual-reality Three Body game in which the protagonist spends more and more of his time. The game features China's first Emperor, Qin Shi Huang, making the following claim: "Europeans criticize me for my tyrannical rule, claiming that I suppress creativity. But in reality, a large number of men yoked by severe discipline can also produce great wisdom when bound together as one" (Liu, 2014, p. 218). Again, we can hear in this speech a defense of contemporary one-party China and its well-documented efforts at social control, and not just in "autonomous" regions like Tibet and Xinjiang.

The Three-Body Problem's many references to the Cultural Revolution include an account of Ye Wenjie's rustication from Tsinghua to China's Inner Mongolia region. The felling of the magnificent Dahurian larch with which the chapter "Silent Spring" opens clearly echoes the assassination of her father at the earlier "struggle session," and the text continues to encourage connecting the insanity of the Cultural Revolution's politics to its environmental aspects: "Ye Wenjie could only describe the deforestation that she witnessed as madness" (Liu, 2014, p. 24). The chapter's title not only relates broadly to Ye Wenjie's ecological awakening but also explicitly relates to Rachel Carson's *Silent Spring*— 寂静的春天 *jìjìng de chūntiān* in Chinese, not to be confused with Deng Xiaoping's "Scientific Spring" (科学的春天 *kēxué de chūntiān*). By juxtaposing the Dahurian larch's age (330 years) with the time it takes to turn a living being into a mere resource (10 minutes), Liu employs his self-described talent for scales. The novel showcases this in multiple dimensions, from Wang Miao's nanomaterials to the illusion of the entire universe's flickering. In the case of Ye Wenjie's dendrocentric (as opposed to anthropocentric) experience of the logging operation to which she has been assigned, considering the deforestation through the lens of Rachel Carson leaves a profound impression: "More than four decades later, in her last moments, Ye Wenjie would recall the influence Silent Spring had on her life" (Liu, 2014, p. 27). More specifically, it exacerbates the already negative opinion of our species she gained courtesy of the Cultural Revolution: "*It was impossible to expect a moral awakening from humankind itself, just like it was impossible to expect humans to lift off the earth by pulling up on their own hair. To achieve moral awakening required a force outside the human race*" (Liu, 2014, p. 28, emphasis in original).

The Three-Body Problem and Chinese Ecocriticism

Ironically, given Silent Spring's focus on the long-term effect of excessive pesticide use, the party apparatchiks who condemn and imprison Ye Wenjie for her modest attempt at halting the deforestation refer to Carson's book as "a toxic piece of reactionary propaganda" (Liu, 2014, p. 33).[6] While *Silent Spring* appears to be freely available nowadays (Peking University Press, 2015), speaking out on environmental matters is still very sensitive, as the tone of Wang Ning, who edited the 2014 ISLE special topic cluster on Chinese ecocriticism, suggests.[7] To a Western reader used to the occasional stridency of American or European ecocriticism, Wang—retired of Tsinghua, the very place where *The Three-Body Problem*'s struggle session takes place—comes across as excessively tentative and deferential. His tone might help to explain Liu's use of circumlocutions. It is precisely because of the complex and (potentially dangerous) interentanglements of science, environmentalism, and literature in China that the relatively safe space of a SF novel is such a promising place in which to examine such connections.

As Shapiro's Mao's *War against Nature* (2001) demonstrates, the connections between the murder of Ye Zhetai and the felling of the Dahurian larch (mentioned above) are by no means accidental, and not only because "abuse of people and abuse of nature are often interrelated" (Shapiro, 2001, p. xiv). Indeed, Shapiro's account of the fate of Mao-era demographers and engineers (Shapiro, 2001, p. 65) is strongly reminiscent of Ye Wenjie's "reactionary" physicist father. The absurd accusations suffered by Ye Zhetai are also consistent with "Mao's disrespect for scientific principles" (Shapiro, 2001, p. 195). The earlier Great Leap Forward (1958-62) included a ruthless campaign to "Wipe Out the Four Pests" (Shapiro, 2001, p. 86) (除四害 *chú sì hài*), that is, rats, sparrows, flies, and mosquitoes. "Too late," Shapiro writes, "the farmers learned that sparrows were their greatest allies in insect control" (p. 87). In Liu's novel, by contrast, we are introduced to the American environmentalist Mike Evans, who struggles to save "a subspecies of the northwestern brown swallow" from extinction (Liu, 2014, p. 305)—a swallow, not a sparrow, admittedly, but certainly close. It is worth noting that the villagers refer to the strange American as "Bethune" (p. 303), the name of a Canadian surgeon immortalized by Mao Zedong (1967).[8]

The Three-Body Problem was published half a century after Mao's notoriously destructive campaigns, and much of it is set closer to our own time. However, Liu's postscript for the American edition of the novel explicitly connects the author's growing scientific literacy and his awareness of the destructiveness of nature: "In that same year when I was first awed by the concept of a light-year, a flood (known as the Great Flood of August '75) occurred near my home village" (Liu, 2014, p. 393). This reference to the Banqiao Dam flood veers quite close to highly sensitive questions of the causes of so-called natural disasters that may in fact be largely man-made.[9]

As for the early twenty-first-century Beijing in which much of *The Three-Body Problem* is set, its notoriously poor air quality has been well documented and is regularly publicized via the U.S. Embassy's Twitter handle @BeijingAir. This is just one aspect addressed by Judith Shapiro in her *China's Environmental Challenges* (2016), a book that emphasizes repeatedly that the problems visible in China go well beyond that nation: "The choices the Chinese Communist Party, national government, and Chinese people are making influence not only the health and well-being of China but the very future of the planet" (Shapiro, 2016, p. 20). As a scholar of international relations, Shapiro may not have SF in mind when making such claims. Nevertheless, her account of "problems of environmental justice across time, space, and species" (Shapiro, 2016, p. 140) fits the scenario depicted in Liu's novel remarkably well. *The Three-Body Problem* expands Shapiro's scope beyond her account of the domestic and international dimensions of environmental justice to an interstellar and quadricentennial scale.

While Liu shows an understanding of our planet's limits,[10] his solutions tend to be more consistent with Chinese terraforming SF of 1960s and 1970s (cf. Li, 2018) or technophile Golden Age SF than with *restrain,*[11] which Ramachandra Guha has identified as

the crucial unifying principle of global environmentalism—the one "idea that unites, which brings together America's John Muir with India's Mahatma Gandhi, Kenya's Waangari Matthai with Germany's Petra Kelly" (Guha, 2000, p. 144).

What other environmentalists does *The Three-Body Problem* feature? The most benign character who might fall under this designation may also be the most ineffectual: Liu's protagonist, the nanotechnologist Wang Miao, is a hobby photographer whose "favorite subjects were wildernesses free of human presence" (Liu, 2014, p. 73). A biologist who believes "that technological progress was a disease in human society" (p. 84) is exposed as a key member of the Earth-Trisolaris Organization (ETO), a movement dedicated to inviting an alien civilization to "Eliminate human tyranny!" (p. 251), echoing the inhumanism of Robinson Jeffers's poem "Hurt Hawks" ("I'd sooner, except the penalties, kill a man than a hawk," line 18).

Three-Body's most prominent environmentalist has, then, been transformed from an idealistic ornithophile into a lunatic-fringe misanthrope prone to human extinction fantasies. While the ETO's commander in chief is the thoroughly disenchanted Ye Wenjie, her comrade and the organization's founder and chief financial backer is the American Mike Evans, the son of an oil billionaire.

Although Ye Wenjie was radicalized during Mao's Cultural Revolution, Evans is wracked with guilt over his family's culpability for Exxon Valdez-style oil spills and other causes of animal extinctions. Evans has taken the argument of Peter Singer's 2002 book *Animal Liberation* to its most extreme conclusion by developing its animal rights philosophy, based on rejecting human *speciesism*, into an ideology he calls "Pan-Species Communism," whose basic tenet is "All lives are equal" (Liu, 2014, p. 307), and which he considers "a natural continuation of the Universal Declaration of Human Rights" (p. 307).

It is presumably characters like Mike Evans that have led Gaffric to see "a critique of deep ecology" (Gaffric, 2019, p. 31) in the novel. Furthermore, it must be admitted that Evans makes a splendidly twisted supervillain. The perverse extreme to which Evans and his ETO have taken the environmentalist tempering of the arrogance of humanism is another consequence of Liu's fondness for playing with scale—one might say that it is but a variation of General Chang's minimization of human history mentioned above.

Apart from the ETO members' implausible faith that Trisolaran rule would be better for the planet than the "human tyranny" whose end they crave, the extremism of men like Mike Evans and Pan Han turns them into caricatures of what environmentalists are like—strawmen more than spacemen. Evans especially starts out as a garden-variety bird lover but soon turns into a ruthless leader who will happily accept the deaths of millions of people for what he considers the right cause—his environmentalism might be called Maoesque, if not Maoist. *The Three-Body Problem* thus includes a character who daydreams about human extinction, even though he is a character for whom the reader is hardly encouraged to root. At best (or worst, depending on one's perspective), the novel is an ambiguous human extinction fantasy—if not as clear-cut as James Cameron's *Avatar* or other films with the implicit message: "If it's us or them, [...] perhaps we should choose them" (Canavan, 2014, p. 12).

Might *Three-Body Problem* then be a critical engagement with China's environmental challenges as well as the range of responses to it, safely embedded in a SF novel? Some of the sections set on the alien planet Trisolaris come closest to a critique of contemporary China—"an outlet for subtle dissent," as an article about Chinese SF in the *Economist* put it. The same article suggested that "it is tempting to draw parallels with the Communist regime, even when the writers themselves do not—and dare not—make those analogies explicit" (*Economist*, 2019).

When the Trisolaran listener is charged by his Princeps with endangering his civilization's survival by sending a warning message to Ye Wenjie, his defense is that he is "tired of Trisolaris. We have nothing in our lives and spirit except the fight for survival." Given the pervasive "spiritual monotony and desiccation," the listener wonders, "is there meaning to such a life?" (Liu, 2014, p. 353). That this may be an oblique criticism of

contemporary China's overwhelming emphasis on material wellbeing at the expense of much else, which is supported by the ensuing description of the Trisolarans' plan to sabotage human scientific progress. In a tour de force of hard SF, Cixin Liu devotes an entire chapter to describing "Project Sophon,"[12] the Trisolaran effort to "transform a proton into a superintelligent computer" (Liu, 2014, p. 361), an undertaking that eats up "the resources intended for another space fleet" (p. 363). For all their hard SF technological wizardry, it is difficult not to read these pages as a satire of modern China's infrastructure-driven development model, a model characterized by various gargantuan construction projects such as the Three Gorges Dam or the Belt and Road Initiative, often with devastating environmental consequences. Just as in contemporary China, skeptical voices are discouraged on Trisolaris, and any loss is presented as the inevitable price of progress. A "propaganda consul" is directed to "face the destruction of Earth civilization with equanimity": "The people of Trisolaris must understand that the destruction of civilizations is a common occurrence that happens every second of every hour" (Liu, 2014, p. 370). China's press releases, which tend to be full of words like "win-win partnership," might not defend its megaprojects in such bold terms, but the ruthlessness with which environmental and other concerns are dismissed makes the similarities with Liu's Trisolarans hard to miss. As if that was not enough, Trisolaran bureaucrats decide to contain the danger of negative foreign influences by "strictly control[ling] the flow of information from the Earth to the populace, especially cultural information" (p. 371). In other words, even the Great Firewall of China, which blocks websites with sensitive material from being viewed in the country, has its equivalent on Trisolaris.

Yang cites as "the major criterion for judging a piece of ecoliterature [...] whether its author holds an ecological stance and perceives nature as it is, devoid of human subjective dominance or anthropocentrism" (Yang, 2013, p. 195). Judged by this standard, Liu's book qualifies not least because of the profound challenge to anthropocentrism that first contact constitutes. As his contribution to the *Science Fiction Studies* special issue puts it, his work goes "Beyond Narcissism." Perhaps critics who lament that "the ecological consciousness in Chinese literature is too limited" (Yang, 2013, p. 200) are looking in the wrong places.

In Liu's novel, the final message humanity receives from Trisolaris is the contemptuous "*You're bugs!*" (Liu, 2014, p. 383).[13] With this interstellar putdown, whose intercultural intelligibility seems highly doubtful, the Trisolarans are understood to consider humans as powerless to stop the alien invasion. This is certainly the defeatist spirit in which Wang Miao receives the message as he proceeds to get drunk until the no-nonsense Da Shi intervenes to sober him up and give him hope. Shi takes Wang to his hometown in an agricultural part of Hebei Province, where he points out how powerless humanity remains in the face of a plague of locusts. Liu's point? "The Trisolarans who deemed the humans bugs seemed to have forgotten one fact: The bugs have never been truly defeated" (Liu, 2014, p. 388).

This may have rung true when *The Three-Body Problem* was first published in the early 21st century, but declines of many varieties of insects cast doubt on that statement. Hobby entomologists in Krefeld, Germany documented the staggering decline in insect biomass over the last few decades, which was popularized worldwide under the label "insect apocalypse" (Jarvis, 2018). This could be seen to reverse the meaning of the ending of *The Three-Body Problem*; it is no longer clear that Liu's work lives up to his own expectations of the SF genre—"the most brilliant sf should be optimistic" (Li, 2019, p. 12).

Conclusion

Even though former President Obama read *The Three-Body Problem* chiefly as escapism, he appreciated its "immense" scope (Kakutani, 2017) and the resulting shift in perspective it provided. However, as we have seen, Liu Cixin does much more than that. One scientist in the novel speaks about "us[ing] the methods of science to discover the limits of science" (Liu, 2014, p. 61). *The Three-Body Problem* could be said to use the methods of literature, specifically SF, to explore and possibly extend the limits of literature. Is *The Three-Body Problem* then a cunningly disguised eco-novel

and thus, pace Liu and his American postscript, "a disguised way to criticize the reality of the present" (p. 393)? Although the book contains sufficient environmentalist material to warrant such descriptions, much of this material is presented in a radically ambiguous way: If Liu depicts the most outspoken environmentalists as bent on destroying humanity and handing the planet to alien invaders, we can hardly read that as a ringing endorsement of their agenda. This radical ambiguity is matched by its ambiguous radicalism, as the warnings concerning the extreme danger to human civilization are immediately undercut by Liu's apparent approval for Da Shi's complacent attitude.

At one point, protagonist Wang Miao is driven to the edge of madness by a countdown that flashes before his vision. Although that countdown ends after the universe appears to flicker, the novel ends with another one, this one invisible, as humanity is given 400 years to prepare for the expected arrival of the Trisolaran fleet. Unless the author has unusual prophetic powers, such an alien invasion seems mercifully unlikely. Nevertheless, we too must grapple with the question of our obligations to future generations. After all, the effects of industrialization on our planet in the form of climate change are being felt now and will likely transform it beyond recognition long before four centuries have passed.

Liu has contrasted the "narcissism" of traditional literature with the broader scope of SF, whose "basic element" is "humanity's relationship with nature" (Liu, 2013, p. 27). Furthermore, he adds, SF can depict alien civilizations in the form of a "species portrayal" (p. 27)—not quite the species-oriented historiography Dipesh Chakrabarty has in mind, but any literary engagement with a nonhuman other, fictitious or otherwise, cannot but sharpen the readers' awareness of their own species.

The great Chinese reformer Liang Qichao believed in "Saving the County by Fiction" (Wu, 2013, p. 5). We now know that saving only one country is no longer enough. On the other hand, as Judith Shapiro (2016) has documented, China will play an outsized role in our civilization's struggle for survival. The solution, as previously indicated, will require the crucial principle of restraint: "Environmentally responsible behavior appears to involve *restraint* and sacrifice" (Shapiro, 2016, p. 18; my emphasis). "Until China confronts its uneasy Maoist legacy," Shapiro argues, "it may struggle fruitlessly to achieve a sustainable relationship with the natural world" (p. 215). I hope to have shown that Liu's *Three-Body Problem* can be seen as a part of this confrontation. Through a scientific understanding of the price of unfettered growth, China might return to the traditional concept of "Harmony between the Heavens and Humankind" (Shapiro, 2016, p. 10) (天人合一 *tiān rén hé*), whose Maoist successor "Man Must Conquer Nature" (p. 10) (人定勝天 *rén dìng shèng tiān*) has proved as destructive to the environment as the latest dispensation "Look Toward Money in Everything" (p. 10) (一切向钱看 *yīqiè xiàng qián kàn*).

Part of *The Three-Body Problem*'s appeal, certainly to a Chinese audience, might be due to the important role China plays in protecting the planet. At the Battle Command Center, it is General Chang who presides as a matter of course, while the handful of NATO and CIA officers in attendance appear quite happy to follow his lead—at a meeting held entirely in Chinese (Liu, 2014, p. 56). Wu Yan mentions this Sinocentricism to explain the popularity of the novel: "Wow, it really could be possible that China might be given a say in the fate of humankind" (Qin, 2014).

Liu Cixin's readers in both China and the West will not have to wait 400 years to see which civilization is better equipped at weathering the ever more frequent and fiercer storms brought about by climate change. But *The Three-Body Problem* may encourage some of them to eschew a destructive short-term approach and take the long view instead. We may not walk under three suns like Liu's Alpha Centaurians, but even as we are warmed by our solitary Sol, an occasional glance beyond our narcissistic selves and toward the sun, perhaps prompted by a bold and challenging science fiction novel, may be wise.

Notes

[1] Other translations also follow this "restored" chapter order, including Gaffric's French version (*Le Problème à Trois Corps*, 2017) and Martina Hasse's German trans-

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ation (*Die drei Sonnen*, 2017).

[2] He may even have enjoyed Verne in the Chinese translations by the pioneering modernist Lu Xun (Han Song 15).

[3] My translation of the Denglish original "'Das Leben der Anderen' meets 'Contact.'"

[4] Though not as common as Liú (刘), which the author of *The Three-Body Problem* shares with its English translator.

[5] Christian's multidisciplinary macrohistorical approach can also be compared to Jared Diamond's popular *Guns, Germs, and Steel*, although that history begins "only" 13,000 years ago.

[6] As Yang Jingcai points out in her article on Chinese ecocriticism, Rachel Carson did in fact play a significant role in the development of nature writing and environmental activism in China, as discussed in Nuo Wang's pioneering 2002 essay "Rachel Carson's Accomplishments in Eco-Literature" (Yang 190) or in Gang Xu's 1988 book *Famuzhe, xinglai* (Wake Up, Woodchoppers!), which "earned Xu a high reputation as a 'Rachel Carson' in China" (Yang 193). Douglas Scott Berman's survey of Chinese ecocriticism acknowledges the crucial role of Carson's *Silent Spring* in U.S. environmentalism, especially its "introductory 'Fable for Tomorrow,' which places the scientific debate inside a literary and theoretical framework" (Berman 396), but does not show the specifically Chinese connections to Carson's book.

[7] Ecocritics "might or might not influence decision makers…" (742)

[8] See McCully's *Silenced Rivers*, especially chapter 4: "When Things Fall Apart: The Technical Failures of Large Dams."

[9] [Because] Earth's resources are limited, the day they run out is inevitable; and at the same time Earth's biosphere is an unstable system which could potentially suffer dramatic change in the future, whether caused by humans or nature, that result in it becoming inhospitable to human life… (qtd. in Li 10-11)

[10] See for example his short story, "The Wandering Earth," recently made into a movie.

[11] After all, *Moonraker*'s Hugo Drax also schemed to bring about the eradication of a fallen humanity, although he planned to bequeath the cleansed planet not to invaders from Alpha Centauri but to a superior kind of humanity—"a new super-race, a race of perfect physical specimens." In *The Spy Who Loved Me*, the next film in the series, Bond faced a supervillain whose nefarious plan for world domination involved a repurposed oil tanker—just like Mike Evans with his *Judgment Day*.

[12] The latter is translator Ken Liu's attempt to render into English the Chinese neologism 智子 (*zhìzǐ*, roughly "wisdom particle"), which, as he points out in a footnote, puns on 质子 (*zhízǐ*), the word for proton (361).

[13] The Chinese edition prints the term 虫子 (*chóngzi*) (*sān tǐ* 三体 292). The semantic range of the English noun *bug* is flexible in that some employ the word narrowly as another word for beetles, whereas "many Americans bury a major part of the insect universe under the label 'bug'" (Fowles 249-50).

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JOURNAL OF SCIENCE FICTION
Volume 4, Issue 2, February 2021
ISSN 2472-0837

Books in Review

Gavin Miller
Science Fiction and Psychology
Liverpool University Press, 2020, hb, 296 pp, £90.00
ISBN 9781789620603
Reviewed by: **Sydney Lane**

Science Fiction and Psychology closely examines how science fiction literature across a range of political types and temporalities uses psychological discourses to construct defamiliarizing novums that "alienate taken-for-granted features of our social life, which then are perceived, in the ideal case, as contingencies that may be open to historical praxis" (30). The bulk of the book is divided into an introduction and five chapters, followed by a summarizing conclusion that stands in defiance of "the boundary work that might aim to segregate science fiction from scientific practice" (258). Primarily working within Darko Suvin's definition of science fiction, Miller delivers an original and compelling contribution to the increasingly interconnected fields of literary and scientific criticism at the fresh intersection of science fiction studies and the medical humanities.

The well-organized and comprehensive introduction restricts the "period of literary history under examination" in the book to the start of the late 19th century to just before the rise of neuroscience (13). According to Miller, this choice in scope is because the rise of industrialization in the West gives form to both science fiction as a genre and psychology as a discipline, the latter of which he defines as a field "that extend[s] methods to knowledge of the soul, self, or mind" (12). The introduction proceeds to five chapters that carefully avoid readings that simply apply a psychological theory to a text to illustrate its supposed "truth" (82). Instead, Miller illustrates how science fiction texts "wittingly or unwittingly, thematize, endorse, and/or challenge psychological knowledge" (39). These chapters show how science fiction deploys the values, rules, and laws apparent in the representative discourses of six types of psychological science including evolutionary psychology, psychoanalytic psychology, behaviourism and social construction, existential-humanistic psychology, and cognitive psychology. In each of these internal chapters, Miller first provides a smartly compact overview of the history and hermeneutics of the psychological school under consideration before going on to successfully discover "neglected psychological meanings" within a wide survey of science fiction works (11), including classic examples like H.G. Wells' *The Time Machine* (1895) to New Wave gems like Ursula K. Le Guin's *The Word for World is Forest* (1972). Miller concludes the book with a brief set of examples that show how psychological science itself specifically deploys aesthetic techniques and narrative strategies from science fiction, such as Steven Pinker's reliance on science fiction extrapolation in his "popularizing, journalistic rhetoric" (247). Miller's conclusion addresses an important "human science" gap in a long critical tradition that studies the rhetoric of the physical and natural sciences as literature—a tradition stemming from Evelyn Fox Keller's germinal analyses of the gendered metaphors used in biology and physics, for example.

Miller effectively argues that science fiction reflects how "psychology… emerges in the late 19th century as a pre-eminent technology of the human" (8). In other words, partially expressed and spread through the popularizing medium of science fiction, various psychological discourses function as utopian and dystopian myths that likely continue to "discursively shape the self with far greater intimacy than the natural sciences" in our specific historical moment (237). Arguably, the ecological sciences have had an immense impact on the construction of human identities and values, at least according to studies in the environmental humanities. But regardless of which side one takes on this minor point, Miller's book was published at the start of 2020 just before borders started closing due to the pandemic, and could not be more apropos

now, as we desperately grapple over what we think the best psychic, sociopolitical, and environmental parameters should be for the human species living in a "new normal." Miller explains that these discussions are important because psychological "[b]eliefs about human nature have ethical implications in part because of the meta-ethical presumption in favour of the right to express one's supposed nature" (38). Miller's careful study of the historical deployment of psychological discourses by science fiction can help to illuminate how the rhetoric of the "new normal," across and outside of academia, can often be reduced to oppositional worldviews regarding how and what human nature *should* or *can* be in pseudo-psychological terms. In the context of late-capitalism, these mistakenly polarized worldviews can often be distinguished between approaches to the world and "human nature" as structured by systems of power and oppression or as structured by "nature." What they have in common is a belief in universal determinism and a penchant for overconfidence in their calls for diverse variants of what amounts to social, cultural, or material (re)engineering with loci of intervention at wildly different scales ranging from individual genes to the population systems. The historical scope of Miller's book humbly cautions and reminds readers that like the re-formulation of narratives about human nature accompanied the discoveries of Darwin and Freud, so too will new "science fictional" mythologies and ideologies spring forth from ongoing conversations about how to live "a good life" in the context of the Anthropocene, now marked by the rise of a novel virus in the era of late-capitalism, crushing inequality, and environmental collapse. Beyond studying texts containing only dystopian-tinged caution, however, Miller does cover several texts that offer a toehold for creative visions of hope and meaning, such as Vincent McHugh's "proto-existentialist" novel *I Am Thinking of My Darling* (1943). Miller claims that the "utopian function of existential psychology is important, since it reveals that inward dimensions such as personal authenticity are now as important to any vision of a better society as the traditional concern for material justice" (200).

What Miller's book so presciently shows the reader is that now more than ever, we may need a deep historical consciousness of the psychological narratives that continue to circulate in popular and scientific culture, and that purport to control, explain, or speculate about the mutually shaping influence of the human mind and the environment. Despite the pressures of living in a dystopian present, Miller's close examination of texts like Naomi Mitchison's *Solution Three* (1974) suggests that we need to responsibly temper naïve, universalizing utopian impulses and equally misguided fatalistic pessimism in our approaches to imagining "human nature" and our relation to the world so that we are more able to avoid recycling worn out narratives, and instead more effective at co-creating truly newer and humane "science fictions" for our shared and impending futures. Perhaps we should follow the lead of the writers Miller considers to have written high quality science fiction narratives and cultivate the creative skill of holding in mind two or more contradictory ideas and values at the same time to critically imagine pluralistic models about the "nature of the human subject" (13) that are workable for our complex world, and which may prevent the reification of lively, "tentacular thinking," to use Donna Haraway's formulation, into the dead-authority of fog-divided camps of common sense or folk wisdom. Miller's study inspires the reader to think that imagining an alternative to our troubling times will require psychological literary and scientific constructions of a consciousness like that imagined in Nietzsche's essay "On the Use and Abuse of History for Life," a consciousness that is simultaneously critical, archival, and creative. When envisioning the future, this consciousness would be able to juggle a "certain kind of knowledge of the past, now in the form of monumental, now of antiquarian, now of critical history" (77). In other words, it is important to ensure that "the better, if not perfect world, imagined by critical utopia, and indicated also by dystopia, must accommodate a pluralism of communities and identities. The diverse traditions into which we are born and raised become an analogous resource to the biodiversity of the natural world" (165).

Books in Review, continued

Finally, Miller's volume also indirectly engages with Peter Nicholls' classic distinction between "soft" and "hard" science fiction. Acknowledging that genre rules are always violated to some capacity and that there are no universally-agreed upon definitions of science fiction, some scholars have suggested that soft and hard science fiction are defined with respect to their scientific counterparts. Whereas hard science fiction texts draw primarily from the "hard sciences" (e.g. physics, chemistry, engineering, etc.) to imagine future technological developments, soft science fiction texts draw from the "soft sciences" (e.g. psychoanalysis, sociology, ecology, psychology, anthropology, etc.) to supposedly develop more themes on the relations between the individual mind and social and nonhuman environments. Other scholars of science fiction have controversially claimed that the primary difference between hard and soft science fiction texts lies in the former genre's uncompromising commitment and almost religious faith in scientific principles (usually from physics or astronomy), as evident by these texts' supposed mimetic depictions of technological gadgetry in the service of an infallibly objective scientific method. Disputes about definitions may ultimately amount to debates about what is science fiction "proper," and may also tell us something interesting and problematic about how gender, class, and race play a role in our different "tastes" for scientific literature. For example, how has a scholar or reader's identity historically influenced the way that so-called soft science fiction is often problematically ignored or dismissed due to its association with a pejoratively feminized and fanciful focus on speculative societies while hard science fiction is preferred for its supposed deep penetration into the so-called real issues of hypothetical extrapolative strategies of scientific and technological domination? Miller's comprehensive overview of the historical dialogues that have existed between science fiction writers and a wide variety of discourses from the psychological disciplines, makes a convincing case for the view that "soft" science fiction is clearly not any less scientifically or culturally significant than "hard" science fiction. In fact, *Science Fiction and Psychology* provides a timely corrective to the overinvestment in hard science fiction by glossing such claims like "'soft sciences' can therefore most probably better serve as a basis for SF than the 'hard' natural sciences; and they have in fact been the basis of all better works in SF'" (Suvin qtd. in Miller 3). Indeed, Miller's book "wittingly or unwittingly" encourages a well-deserved shift in attention to marginalized science fictions and sciences.

JOURNAL OF SCIENCE FICTION
Volume 4, Issue 2, February 2021
ISSN 2472-0837

Books in Review

John Scalzi
Head On: A Novel of the Near Future
Tor Books, 2018, hb, 336pp, $25.99
ISBN 9780765388919
Reviewed by: Nancy A. Nield

Getting Your Head on Straight—or Not: John Scalzi's World after a (Fictional) Pandemic

This review offers a critical examination of prolific science-fiction author John Scalzi's novel *Head On: A Novel of the Near Future* (2018). While my focus will remain on this book, I will refer to two earlier novels in what I'm terming the Lock In series: the appropriately titled *Lock In: A Novel of the Near Future and Unlocked: An Oral History of Haden's Syndrome*, both published in 2014. I found it rather surprising to discover several novels, some science fiction, with central characters affected by locked in syndrome (LIS), including Alexandre Dumas' *The Count of Monte Cristo* (1844), Bernard Werber's science fiction novel *The Ultimate Secret* (2001), and Sharon McCone's *Locked In* (2009).

Scalzi is perhaps most well-known for *Redshirts: A Novel with Three Codas* (2012) and the *Old Man's War* series of novels (2005-2015). As a voracious reader of science-fiction for more than forty-five years now, I only found my way to *Redshirts* relatively recently. Finding that novel humorous and intelligent, I moved on to Scalzi's *Android's Dream* (2006) and am currently reading *The Dispatcher* (2017). I fully expected the Lock In books to offer me the same well-crafted narrative, interesting and individualized characters, rapidly paced plot, and witty dialogue, all thoughtfully intersecting with popular culture. While some of those elements remain in *Lock In* and *Head On*, they struggle to emerge in rather ponderous stories.

Both of these novels are set in a near-future United States where a biological pandemic has affected a significant portion of the population with locked-in syndrome (LIS), a real medical condition in which traumatic brain injury, stroke, or brain stem lesions leave the sufferer cognitively undamaged but almost completely paralyzed and unable to move or speak. We learn in *Lock In* that because First Lady Margaret Haden contracted the disease, popular awareness of LIS rose and the disease became known as Haden's. As the series opens the reader discovers that, with massive government financial support, researchers and scientists have designed and implemented artificial neural networks which can be implanted in the brains of Haden sufferers. This supplementary web makes it possible for sufferers of LIS to pilot what Scalzi describes as "personal transports," popularly known as "threeps." In a graceful gesture of refusal, Scalzi never explicitly describes a threep, allowing the reader's imagination to construct the appearance of this robotic transport. From brief comments, the reader gleans that threeps are humanoid, marketed and sold by a handful of companies, and, like cars, have recognizable models, some more expensive than others. Although the reader is never certain whether threeps fall under the category of robots or androids, that blank space is automatically filled by pop culture robot imagery, especially that from science fiction. It's not surprising then that threep is a term derived from "Star Wars" iconic robot character C3PO. I will expand on this remark shortly.

As in *Lock In, Head On* once again pairs the Washington D.C. FBI agents Chris Shane, a Haden's sufferer, or Haden, with veteran female agent Leslie Vann. The plots of both novels revolve around investigating the mysterious deaths of those affected by Haden's, either directly or indirectly. Shane accompanies his partner in a threep, while his physical body remains in his wealthy parents' home, tended by nurses who monitor the various tubes, fluids, and medications that keep his immobile body alive.

The title *Head On* in part refers to the scene of an

alleged crime, a Hilketa field. This sport consists entirely of two teams of threeps whose offense racks points when they pull off the head of the opposing team's goalie. Shane and Vann are deployed to investigate why one of the players dies in puzzling circumstances. So the themes of competition, opposition, hostility, a triad of nouns linked to fragmentation and collapse, are introduced almost immediately in *Head On*. More specifically, the deliberate fracturing of the threeps on the sports field introduces an appropriate motif for Scalzi's continuous wrestling to balance the genres of police procedural/mystery with near-future science-fiction. Rather than deftly interweaving the two genres, in the manner, for example, of Richard Morgan, Connie Willis, or Liz Williams, Scalzi inadvertently places the thriller in opposition to the underlying science fiction narrative. For example, in both *Lock In* and *Head On*, any rhythm or pace which the story might accrue comes to a screeching halt multiple times when secondary characters insert themselves merely to provide background. As a reader, I found this tiresome, and rather lazy on Scalzi's part. In contrast to other Scalzi novels, the dialogue is often stilted, and overstuffed with explanation and background story. It's as if Basil Exposition from the "Austin Powers" movies had taken permanent residence in the books.

Both novels in the Lock In series are written in the first person, from Shane's viewpoint. As the ostensible main character struggling with Haden's, the reader would expect this protagonist to emerge as multi-faceted and rounded, evidencing change and emotional growth. Not so. Scalzi writes Shane as a mere compilation, a two-dimensional mosaic of attributes: wealthy, son of a basketball player, Haden sufferer, FBI agent, housemate of other Hadens.

While the origin of Scalzi's new noun "threep" as a derivation of C3PO is clever, it's also problematic: recall that "Star Wars" presented C3PO, as a source of laughter and comic relief, a kind of jester always seeking to maintain the dignity and gravitas that his golden metal body and English accent suggested, but never quite achieved. The classic robot of science fiction is both beautiful and monstrous and possessed of the capacity to exercise the power of both virtue and evil. But the term "threep"'s reference to the bumbling C3PO introduces an ongoing note of gentle mockery, a thumbing of the nose at the entire cultural encyclopedia of robots, androids, and automatons, programmed and perfected machines often in uneasy alliance with humanity. Where does the often vacant and motionless, mutable *and* muteable threep- container fit in the history of mechanical men from *I, Robot* to *Robocalypse*? While the Lock In series does grapple with serious social, cultural, institutional, and economic issues, the silhouette of C3PO reminds us that Scalzi is not rewriting *War of the Worlds,* where titanic voracious robots stride amidst helpless humans. Rather, the threeps are literal vehicles for the very imperfect humans who animate them.

Like other Hadens, Shane has access to the "agora," a kind of glorified social media sphere in which those locked in can design and virtually inhabit a personal space. Scalzi reminds the reader again and again that Shane's site resembles the Bat Cave. However, as much as Scalzi teases parallels between Shane, scion of a wealthy family fighting crime in his role as an FBI agent, and Bruce Wayne/Batman, this potentially interesting pop culture reference quickly evaporates. The trope of a virtual world or cyberspace, often existing on an endlessly malleable electronic or computer-mediated platform, is a favorite setting for generations of fantasy, horror, and science fiction writers, ranging from Roger Zelansky, Stanislaw Lem and Philip K. Dick to William Gibson, Neal Stephenson, and Cory Doctorow, to name but a few. Just as Scalzi chooses not to develop the Bat Cave analogy, he misses the opportunity to make his agora a more robust and complex structure where *Neuromancer*'s "cyberspace cowboy" would happily dissolve his consciousness. In fact, rather than fashion his agora space/place as a fantasy terrain which couldn't exist in a world bound by logic and physics, Shane's cave, as the noun suggests, serves him merely as a kind of retreat, in a way that replicates the way in which his physical body is shut away in a featureless bedroom.

As I wrote earlier in this review, *Head On* is thematically built on opposition and conflict. This theme

JOURNAL OF SCIENCE FICTION
Volume 5, Issue 1, May 2021
ISSN 2472-0837

of destruction and fragmentation is enacted by our erstwhile protagonist Shane, who exhibits a troubling penchant for violent altercations in his pursuit of justice, resulting in the destruction of several threeps. Scalzi presents Shane as almost as robotic as the threep-containers he inhabits, a barely changing, static personality. Shane's regular cycling through threeps is framed as humorous, but after enduring this behavior in two novels, I couldn't help but perceive Shane's actions as compulsive, sadly the only really noteworthy aspect of his thin personality. Nevertheless, Shane's repeated bouts of self-harm, or rather threep-harm, enact a narrative symmetry by echoing the more commonplace compulsions/addictions of his partner Vann, who finds all the usual ways to soothe herself. I'll return to Vann momentarily.

What quickly develops as some of the *Lock In* novels' major contrasting themes are Haden's sufferers/non-Haden's sufferers, threeps/humans, mobility/immobility, machine/the organic, body/immateriality of mind, to note just a few. All of the ideas embedded in these antithetical pairs participate in the much larger discourse of disability and disabled bodies. What arises as perhaps one of the most troubling aspects of *Lock In* and *Head On* is the storyline's rendering invisible of the actual physical bodies of Shane and other Haden sufferers. Disabled bodies in the narratives are messy and awkward afterthoughts to be visited periodically, but quickly pushed out of the visual field, banished from sight to a literally closeted space. The physical characteristics of the Haden affected bodies, everything from gender and race to eye color and the shape of the nose, are removed from view and consideration. As a disabled woman, I came away from the Lock In series in confusion: am I to look forward to a future where any physical issues I suffer from MS are rectified with a robotic transport that liberates me to walk, run, jump, skip? But should I welcome that future if my actual body becomes a source of embarrassment, a medical mistake from which people should turn away, lest they be (and I be) reminded of how my flesh failed?

Both *Lock In* and *Head On* repeat several times that Shane is biracial. Yet, that attribute never finds a place in the story. How can it? Shane's actual disabled, locked in body, his skin color, his hair texture, etc., only inhabits the visual and tactile field of his caretakers, and occasionally his mother, himself, and his housemates. In a short passage, Shane recounts gazing at his body in its "cradle," and experiencing a dizzying double vision, or more precisely a doubling of his sense of his body's orientation, balance, and posture. This proprioceptive impairment (and here I'm riffing on a terminology that Shane shares with the reader) plays a role in phantom limb syndrome; Shane apparently finds himself troubled by "phantom body syndrome." Yet, he apparently feels no real connection to his organic, imperfect, disabled self in favor of his multiple--and apparently endlessly replaceable- threeps. Scalzi really misses an opportunity to probe Shane's sense of physical and psychological uneasiness as the latter gazes at himself. The story introduces conflict and continuous pressure here again if we define Shane's self as his actual corporeal body, which his neural network's electronic impulses always seeks to overshadow. Perhaps Shane's compulsion to destroy his threeps might testify to that desire to interrupt the threep aided performance of himself, a phantom (biracial) body never at rest.

A major grace note in both *Lock In* and *Head On* is the character development of Shane's partner, Vann. By *Head On*, she bursts forth as fully rounded and three-dimensional, gifted with sarcasm and dry humor that enlivens every page in which she appears. Clearly, she's a latter- day version of the Mickey Spillane private eye, emotionally bankrupt, disenchanted, wreathed in smoke and one-liners. Vann's physical body creates a simple, but lovely contrast with the mechanical presence of Shane in his shifting threeps. By the same token, Vann's feminine corporeality is tainted by more than a hint of misogyny: all of her leisure and pleasure activities draw attention to sensation, to touch, to basic bodily functions that are not conducted by sterile tubes: vaping, drinking, sex. Vann threatens to topple into an incarnation of traditional femininity as a collection of orifices and mindless sexuality. Nevertheless, some of the most successful passages of either novel remain the dialogue

Books in Review, continued

between the two partners: the terseness and muscularity of Scalzi's prose achieves an almost musical rhythm as both Vann and Shane perform a rapid-fire kind of call-and-response

The *Lock In* series introduces many intriguing ideas from the science fiction universe that simply don't have room to develop. Much is sacrificed at the altar of crime drama/police procedural demands. Scalzi is a talented writer who never lets his attention stray from detail while keeping a keen eye on the story. The murder mysteries at the center of both *Lock In* and *Head On* are imaginative, intelligently plotted, and more than well-stocked with memorable suspects, both Haden and non-Haden. The best sections in the novels maintain a balance of narration, action, and dialogue, which generate a momentum on which the reader can easily surf. But as I mentioned before, because background or exposition in the Hadenverse needs so often to be detailed, forward motion ultimately slows.

I suspect that Scalzi tried to remedy the problem of Basil Exposition through writing *Unlocked: An Oral History of Haden's Syndrome,* a short addendum to *Lock In* and *Head On*. Published the same year as *Head On*, the novel is a collection of fictional interviews with doctors, scientists, reporters, and Haden sufferers who offer more robust details of the history of Haden's, the scientific breakthrough which allowed victims of LIS to pilot threeps, the social and political divisions among the Haden community, etc. Although *Unlocked* is not structured like a standard novel, in some ways it's the most successful of the three novels of the Lock In universe. Scalzi permits himself to indulge in a more focused exploration of the Hadenverse which in turn encourages the reader to share his delight in building a world, or at least a United States, coping with the aftermath of a pandemic. What could be better reading in the second year of COVID-19?

JOURNAL OF SCIENCE FICTION
Volume 4, Issue 2, February 2021
ISSN 2472-0837

Books in Review

Sherryl Vint
Bodies of Tomorrow: Technology, Subjectivity Science Fiction
University of Toronto Press, 2007, hb, 243 pp, $69.00
ISBN 9780802090522
Reviewed by: Alejandro Lozano

Science fiction holds a privileged position to reflect upon the unpredictable consequences of scientific and technological progress. Its role as a platform to highlight the implications of such developments increased during the last decades of the 20th century with the rise of cyberpunk fiction and a new wave of hybrids, ranging from Replicants to RoboCops, Terminators and AIs that looked back at us from spectacular cinema screens. Thinkers like Donna Haraway, Rossi Braidotti or Vivian Sobchack began to include these frontier entities as core characters of their theories, and Sherryl Vint pursues this line of thinking further in *Bodies of Tomorrow*, a critical analysis of selected science fiction texts.

Vint exposes the insufficiencies of disembodied posthuman theories through a methodological mixture of literary studies and critical theory. The two main arguments of the book, as the author explains, are "first that discursive struggles over representation are also political struggles about valid subject positions, and second that we are currently in a moment of defining a new human subject, a posthuman subject" (171). These central points are condensed on the picture of the Möbius Band (a surface with only one side and one boundary), a metaphor that Vint uses recurrently to accentuate the complexity of the human subject focusing on the centrality of the body, which is both material and discursive. Following Judith Butler, Vint argues that the material body is read and experienced through the consumption of cultural representations that talk sense into it as a social subject (17). *Bodies of Tomorrow* elaborates this idea exploring science fiction texts featured by unfitting and marginalized bodies struggling to process the paradoxes and contradictions of their universes.

The book is divided into six chapters plus an introduction and a conclusion. The introduction (*Problematic Selves and Unexpected Others*) outlines the general structure of the book and focuses on the body as a necessary nexus for any theory of the posthuman (16). The first chapter (*Gwyneth Jones: The World of the Body and the Body of the World*) comments on Gwyneth Jones' s *Aleuthian* trilogy. Jones's novels are the starting point of the essay because the aleuthian culture manifests the idea that identity is socially acquired without forgetting the fundamental importance of the biological dimension. The second (*Octavia Butler: Be(com)ing Human*) centres on Octavia Butler's *Xenogenesis* trilogy and the Oankali, an alien species of gene traders, to emphasize the need to balance technological and ethical investment to counter risks such as the rise of genetic essentialisms or new ways of slavering bodies through technological dominance. The third section (*Iain M. Banks: The Culture-al Body*) explores Ian M. Banks's *Culture*, where the Culture impersonates an apparently perfect form of society that has eradicated the need for work and discrimination for race or gender.

The two next chapters (*Cyberpunk: Return of the Repressed Body* and *Raphael Carter: The Fall Into Meat*) offer a critical review of cyberpunk writings. Although the popular opinion depicts cyberpunk as a cultural phenomenon that renders the body as obsolete flesh, Vint brings to light the ambiguities of the genre and demonstrates how characters like William Gibson's Case in *Neuromancer* or Pat Cadigan's hackers in *Synners* are fully aware of their physical condition despite their role as cyberspace jockeys. The sixth chapter (*Jack Womack and Neal Stephenson: The World and the Text and the World in the Text*) comments on Jack Womack's *Random Acts of Senseless Violence* and Neal Stephenson's *The Diamond Age*. Both works illustrate the power of technologies (an enhanced book and a diary are central elements

Books in Review, continued

of the novels) to remake ourselves (169), thus closing the argument started with the analysis of Gwyneth Jones's trilogy.

Vint concludes by claiming the need of an embodied posthumanism and presents the transhumanist movement as an example of a disembodied theory of the posthuman that updates the postulates of modern liberal humanism. According to Vint, the posthuman should indeed stitch the cartesian divisions of modern philosophies (mind/body, interior/exterior, nature/culture) and open scenarios where every-body can find cultural representations to materialize their identities in the politic space.

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Volume 5, Issue 1, May 2021
ISSN 2472-0837

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Artists

Julian Faylona is a self-taught Graphic Designer and Digital Artist/Illustrator, from the Philippines. He began his career as a feature writer and eventually found interest in the creative field. With a background in Mass Communications, he merges his design and communication skills to create design and visuals for marketing campaigns, brand identity, covers, landing pages and other range of collaterals either in print or digital. He has worked on projects for international clients from various industries, including but not limited to agencies and institutions, to well known individuals or groups in the music and entertainment industry, as well as award-winning authors.

Authors

Eduardo Santiago Ruiz holds a Ph.D. in Humanities from Universidad Autónoma Metropolitana, México. He is currently working at the Universidad Pedagógica Nacional and he is part of the National System of Researchers. His research interests include Mexican Literature, Science Fiction, Reading Comprehension and Multiliteracies. He is fond of mathematics and physics, and in his next life he will reincarnate as an astronomer.

Hans-Georg Erney holds a Ph.D. in English from Emory University. He is currently an Associate Professor of English at Gerogia Southern University, where he teaches about postcolonialism, ecocriticism, South Asian literature, and twentieth-century British literature. Some of his recent works include, "Dodging Pitfalls in Dodgy Autorickshaws with Amitava Kumar" (2016) in *ARIEL: A Review of International English Literature*, and "The (Re)turn to History" (2014) in the *Journal of Commonwealth and Postcolonial Studies.*

Juliette Bessette is a Ph.D. student in art history at Sorbonne University (Centre André Chastel). Her research focuses on the impact of technical and scientific changes on artistic creation and history of ideas in the post-World War II era in England and the United States. She is part of the research project "New Media: myths and experimentations in the arts" (DFK – Paris). She recently co-edited the book *The Machine as Art / The Machine as Artist* (2020, with Frederic Fol Leymarie and Glenn W. Smith). She also is a lecturer in Art of the XXth century and in Contemporary art at the École du Louvre, and led the project "À la recherche du musée" with the museologist Vanessa Ferey at the Musée du Louvre (Centre Dominique-Vivant Denon).

Kristine Larsen holds a Ph.D. in Physics from the University of Connecticut. She is currently a professor of physics and astronomy at Central Connecticut State University. She is the former president of the American Association of Variable Star Observers and the editor of the Astronomical League's quarterly magazine, *Reflector.* Her rather eclectic research interests focus on the intersections between science and society (especially the use and misuse of science in science fiction and fantasy media), and her books include *Particle Panic! How Popular Media and Popularized Science Feed Public Fears of Particle Accelerator Experiments* (2019), *The Women Who Popularized Geology in the 19th Century* (2017), *Cosmology 101* (2007), and *Stephen Hawking: A Biography* (2005).

Race MoChridhe holds a Masters of Library and Information Science, from the University of Wisconsin Milwaukee. He serves as the scholarly communication coordinator for Atla, where he produces open access journals and monographs and aids development of open source publishing tools for *Atla Open Press*. As part of this role, he is also an active member of the Library Publishing Coalition.

Sandra Cox holds a Ph.D. in English from the University of Wisconsin. She is currently an Assistant Professor of English at Southeast Missouri State University. Her research interests include 20th and 21st Century American literature, African-American Literature, Latinx Anglophone Literature, LGBTQIA Studies, and Feminist and Gender Theory. Her monograph, *An Ethics of Reading: Interpretative Strategies for Multicultural American Fiction*, was published in 2015.

Book Reviewers

Alejandro Lozano, Ph.D. is a postdoctoral researcher

About the Contributors, cont...

at the Department of Logic, Philosophy and Aesthetics of the University of Salamanca (USAL) and web developer. He is a member of the Group of Aesthetics and Art Theory (USAL/Ibero–American Institute) and ARES (Aesthetics, Identities and Spanish Video Art). His research interests include the social imaginaries of technology and aesthetic theory applied to video games.

Nancy A. Nield is an independent scholar who received her MA and Ph.D. in art history from the University of Chicago. Her dissertation explored the representation of the Holocaust in post-WWII American-Jewish Abstract Expressionist painting, especially that of Barnett Newman (1905-1970). Her academic expertise includes modern and contemporary art history and criticism, gender and LGBTQ studies, Jewish studies, and lately the art and performance of disabled artists from Frida Kahlo to Riva Lehrer to Paul Drake. Still writing and teaching (when she can), Nield is herself disabled with multiple sclerosis and arthritis, the latter with which she's coped since childhood. Science fiction has always provided her a gateway to "other worlds than these," to quote a character from Stephen King's dystopian Gunslinger novels. Nield is planning a series of articles on works of contemporary art which deploy cyberpunk and related postmodern theory to represent different flavors of the disabled and/or augmented body.

Sydney Lane is a doctoral candidate in the Department of English at the University of California, Santa Barbara. She received her bachelor of science in wildlife ecology and conservation from the University of Florida, her master of arts in English from the University of Montana, and her master of science in theoretical psychoanalytic studies from the University College London. Sydney studies 19th-century British literature and contemporary speculative fiction through an interdisciplinary framework that draws from the environmental humanities, feminist science and technology studies, and psychoanalysis.

Editors

Aisha Matthews (Managing Editor) holds a B.A. in English from Yale University, and an M.A. in English from Southern New Hampshire University. Her research interests include Afrofuturism, disability studies, young adult science fiction, womanism, biopolitics, and postmodern theory. Her first book chapter, "Conspiracies of the Flesh: Disciplinary Power and Female Embodiment in Margaret Atwood's *The Handmaid's Tale*" was published in the anthology *Critical Insights: Conspiracies* (Salem Press, 2020), edited by Jim Plath, in 2020, and most recent article, "Give Me Liberty or Give Me (Double)Consciousness: Literacy, Orality, Print, and the Cultural Formation of Black American Identity in Harriet Jacobs's *Incidents in the Life of a Slave Girl* and Octavia Butler's *Kindred*" was just featured in *Third Stone Magazine* (2021). She is also a freelance editor, and serves as the Director of Literature Programming for the Museum of Science Fiction's Annual Escape Velocity Conference.

Anthony Dwayne Boynton (Editor) ia a Southern scholar-blerd who holds a Ph.D. in English from the University of Kansas. This Georgia native earned his B.A. in English at Fort Valley State University and his M.A. in English at Georgia College & State University. He is a writer and scholar of black speculative fiction and researches sci-fi's connections to black cultural politics.

Barbara Jasny (Editor) holds a Ph.D. from Rockefeller University and her career has been science-first, performing research in molecular biology and virology and then becoming a research Editor and Deputy Editor for *Science* magazine. She has communicated science through books, articles, posters, art displays, virtual presentations, meetings, digital media, and podcasts.

Benet Pera (Editor) holds a Ph.D. in Biological Sciences from Complutense University of Madrid, Spain. As a postdoctoral researcher, he performed preclinical studies at Memorial Sloan-Kettering Cancer Center, and investigated new therapeutic strategies to treat cancer at Weill Cornell Medicine. He is currently applying both his science background and analytical skills in the investment industry, working

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Volume 5, Issue 1, May 2021
ISSN 2472-0837

About the Contributors, cont...

in equity research covering the biotech sector in an investment bank.

Doug Dluzen (Editor) holds a Ph.D. in Biology and is an Assistant Professor of Biology at Morgan State University in Baltimore, MD. He is a geneticist and has studied the genetic contributors to aging, cancer, hypertension, and other age-related diseases. Currently, he studies the biology of health disparities and the microbiome in Baltimore City. He teaches evolution, genetics, and scientific thinking and you can find more about him on Twitter @ripplesintime24. He loves to write about science and enjoys exploring scientific ethical and societal issues in his own speculative fiction writing.

Melanie Marotta (Editor) holds a Ph.D. in English from Morgan State University, where she is currently a Lecturer in the Department of English and Language Arts. She is originally from the province of Ontario in Canada, and her research focuses on science fiction, the American West, contemporary American Literature, and Ecocriticism.

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ISSN 2472-0837

Journal of Science Fiction Special Issue on Young Adult Speculative Fiction

Young adult (YA) speculative fiction routinely engages with many of life's most important questions: love, death, relationships, the future of the planet, identity, belonging, and our very future as human beings. Whether styled after the classical bildungsroman or otherwise, coming of age narratives in the speculative genre encourage readers to challenge existing power structures and advocate self-expression and self-confidence. They also return agency to those often divested of power by the institutional and social structures that restrict freedoms based on age, and recenter the adolescent as a critical social figure.

To highlight the importance of young adult science and speculative fictions, the *Journal of Science Fiction* is seeking academic articles of 5,000 to 8,000 words, short reflection pieces of 500 to 1,000 words, and book reviews of 500-750 words by **August 1st, 2021** for a special issue on YA speculative fiction.

For the purposes of this issue, Young Adult speculative fiction will be construed broadly to include traditional "hard sf," as well as speculative fiction, fantasy, horror, and magical realism. We have expanded the parameters that usually guide our selection process for this issue to account for the wide range of YA speculative fiction texts and the industry trend of categorizing YA fiction differently than adult fiction. We hope that by expanding this definition, we will attract submissions that explore all aspects of YA speculative fiction across diverse cultures and cultural constructions.

We welcome submissions on any and all aspects of Young Adult speculative fiction, but are especially interested in works that offer insight into (but are not limited to) the following:

- The speculative bildungsroman
- BIPOC girls and girlhood
- Race, gender, sexuality, ability, or gender identity
- Resistance against authority and institutions
- Counter culture
- Beauty standards and double standards
- Posthumanism and transhumanism
- Environmental dispossession
- Belonging
- Cross-cultural friendship or romance
- Parent-child interactions and other power imbalances
- Individuality and rebellion
- Representations of agency
- Engagement with post-colonial, feminist, queer, and disability theories
- Non-Fiction
- Artwork
- Music
- Book Reviews
- Interviews

Special consideration will be given to essays addressing literature, theory, and contemporary texts and trends.

Please submit completed essays through the MOSF *Journal of Science Fiction* website, http://publish.lib.umd.edu/scifi/index. To submit your work, click "About" > "Submissions: Online Submissions," create an account, and follow the submission prompts.

OR

Email to: aisha.matthews@museumofsciencefiction.org

Remember to include the following as separate documents:
1. Your demographic information (can be contained in email)
    - Name, Affiliations, Contact Information
2. Abstract (up to 300 words) & Keywords
3. Essay containing no identifying markers (to ensure double-blind peer review)

Manuscripts should be submitted as .doc, .docx, or .rtf files. All submissions should be in APA style. The text of the manuscript and the reference list should be submitted as a single file.

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Announcement

Retraction from Middle Eastern SF Special Issue (V4N2):

We deeply regret to inform our readers that we must retract one of the pieces from our most recent issue (V4N2), our special issue on Middle Eastern Science Fiction: "Herzl, Nakba, and Nationalist Escapism in Israeli and Palestinian Science Fiction," by Timothy Quevillion.

Upon receiving allegations of plagiarism, our editorial team, in conjunction with our Editorial Board of Directors, conducted an investigation. All relevant parties (including the author and scholars) were notified of our investigation, which yielded the following results.

After receiving a response from the author and assessing both the initial submission and the final article against the scholars' original works, we have determined that while the error appears to be unintentional, the article nevertheless violates our plagiarism policy, which mandates original scholarship and proper attribution.

For the purposes of our publication, plagiarism is defined as "the act of presenting the words, ideas, or images of another as your own" (see APA Ethics Code Standard 8.11, Plagiarism). In accordance with the American Psychological Association's interpretation, we agree that plagiarism "denies authors or creators of content the credit they are due. Whether deliberate or unintentional, plagiarism violates ethical standards in scholarship" (Ibid.).

It is in this spirit that we feel ethically obligated to permanently retract the above article.

A note on culture and literature in translation: In general, we strive to cover a broad array of topics related to the study of science fiction, including various cultural futurisms, which focus on specific cultures' or regions' literatures. The Middle Eastern Science Fiction issue was a special project for us—one that took us far outside of our comfort zone with the need to employ Guest Editors and to engage with a variety of scholarship originally published in Arabic or Hebrew. Our team has learned some difficult lessons about publishing on literature in translation, and about our capacity to efficiently vet scholarship that is not represented in our editors' scholarly interests. In the future, we will strive for more accurate representation of any and all cultures that we choose to highlight.

As an all-volunteer organization, the MOSF *Journal of Science Fiction* runs on donated time and labor. Within our abilities, we do the best that we can to assure the publication of original scholarship through several rounds of editing (including peer review and copyediting). The use of a plagiarism detector has now been integrated into our review process to decrease the odds of such an incident occurring again. With all of that said, there may still be those occasional times when, due to the diverse nature of existing scholarship, errors of attribution occur. In our management of this issue, we would like to ensure our readers, past authors, future authors, and the scholarly community at large that we take issues of plagiarism seriously and when identified, said issues will be rectified as soon as

possible. We sincerely apologize for any harm caused by the author's error and our part in the publication of this research.

On behalf of the MOSF, I would like to thank you—our readers—for your continued support of the *Journal of Science Fiction*.

Aisha Matthews
- Managing Editor