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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

The Three-Body Problem, continued

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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