

RESEARCH ARTICLE

The sheep look forward: Counterfactuals, dystopias, and ecological science fiction as a social science enterprise

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John Brunner's 1972 novel, *The Sheep Look Up*, is the story of the year leading up to a global ecological and political catastrophe. Set primarily in the United States in an unspecified near future, *The Sheep Look Up* tells the story of "death by a thousand cuts": problem upon problem, malfeasance upon malfeasance, which accumulate, reinforce each other and are met only by a failing political and economic system that ultimately collapses under its own weight. This article reflects on themes and topics of the novel that resonate for social science theorists and teachers in the environmental social sciences, including global environmental politics. First, it provides a type of counterfactual analysis. It opens a window into how the world might have been had certain actions not been taken. Second, it provides a warning: how the world might be if we do not act. Third, it provides a model of how a disastrous transition might unfold as social resilience has been worn down. Looking back on the almost fifty years since the novel was written demonstrates how its scenario was averted through concerted government and societal actions, but the article also points out how Brunner's work has strong resonance with our present – and at different times in the recent past.

Keywords: Science Fiction; dystopia; eco-catastrophe; necro-capitalism; scenarios; counterfactuals

1. A 1972 novel of our times?

If this were the final year of our civilization, would we even know? Answer: probably not. Would we or could we act? Almost certainly not. At least according to John Brunner's 1972 novel, *The Sheep Look Up* (as the book cover in **Figure 1** vividly suggests). It is the story of the year leading up to a global ecological and political catastrophe. The title is taken from John Milton's poem *Lycidas* (1637). These lines make up the entire epilogue of the novel:

"The hungry sheep look up, and are not fed,
But swoln with wind, and the rank mist they draw,
Rot inwardly, and foul contagion spread" (p. 461)¹

Set primarily in the United States in an unspecified near future, *The Sheep Look Up* does not tell the story of a single great cataclysm – a nuclear war or a climate catastrophe. It tells instead the story of "death by a thousand cuts": problem upon problem, malfeasance upon malfeasance, which accumulate, reinforce each other, met only by a failing political and economic system that collapses under its own weight.

Sheep predates climate change as a causal force in environmental decline. Brunner instead draws on a complex variety of causes and their interactions – long-range

air pollution, pesticides, famine, unrest, state violence, terrorist attacks, biological invasions, water pollution, treatment-resistant diseases – in the depiction of this decline. As an example of pre-apocalyptic fiction, it is the very opposite of a stable transition towards global sustainability. It resonates with a political context of economic decline, political corruption, war and terrorism, and dismantled environmental protections – but with additional twists. It depicts a society whose social and ecological resilience has been fatally undermined, an uncontrollable spiraling out of control.

It also predates "cli-fi," science fiction that deals with the impacts of climate change on human civilization, and it has none of the earnestness that characterizes some of that genre. Brunner's work, and its anger is representative of other works of that time: in this case, anger not against humans per se but the structures they live in, and corporate/political power that, along with individual neglect and corner-cutting, pushes the planet towards doom.

The novel has no real heroes (and an impotent savior). It also has no super-villains, or even, really, anyone intentionally evil. Instead, it follows twenty or so characters over the course of a year, none of whom have control over their own or others' destiny. It is an insightful and compelling case study for anyone exploring the linkages between speculative fiction, imagination and environmental politics, especially as the world it depicts is so well realized, and not a million miles from our own.

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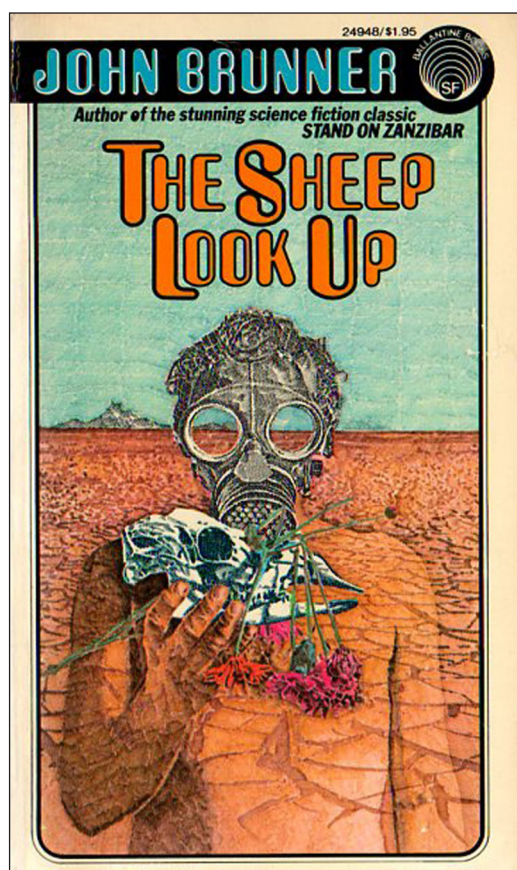


Figure 1: The cover of the first mass market paper edition (1973, Ballantine Books).

This article reflects on the themes and topics of the novel that resonate for social science theorists and teachers in the environmental social sciences, including global environmental politics. First, it provides a type of counterfactual analysis. It opens a window into how the world might have been without, for example, in the absence of the US Environmental Protection Agency (EPA) or the UN Environment Programme (UNEP), both established around or just after the book's publication. Second, it provides a warning: how the world might be if we do not act. Third, it provides a model of a disastrous transition from a bad situation to an apocalyptic one, where social resilience has been worn down, and one disaster leads to others, with a snowballing (or explosive) effect.

After a brief account of the book's context and plot, I examine each of these themes, bringing in additional examples from writing, television and film. This exercise highlights the importance of well-realized imagination in contemplating a world going wrong, and human agency (or the lack thereof): what Gerry Canavan calls "necro-futurism" (Canavan, 2014).

2. Rushing to the brink: The novel's context

John Brunner (1934–1995) was a prolific and award-winning British science fiction writer with a strong transatlantic sensibility. He was also an anti-nuclear activist and "a noted critic of bad science."² His writing style in *Sheep* and other novels emulates John Dos Passos (U.S.A. Trilogy): fragments in different styles (newspa-

per accounts, narratives, advertisements) that follow the events and characters, only adding up to a whole towards the end.

He is best known for what has come to be called the Club of Rome quartet: *Stand on Zanzibar* (1968), *The Jagged Orbit* (1969), *The Sheep Look Up* (1972), and *The Shockwave Rider* (1975) deal, respectively, with population, violence, pollution and the rise of the computing age (Brunner used the term "worm" for what we now call a computer virus).³ The Club of Rome is a global think tank established in 1968 to address international issues concerning the future of humanity, known for publishing *Limits to Growth* (Meadows et al., 1972). *Limits* and other works of the late 1960s that fueled modern environmentalism are said to have inspired Brunner's work.

To give a flavor of the novel, the basics of Brunner's world are not that different from those of the early 1970s (nor necessarily from our own in the second decade of the 21st century), just a whole lot further along the same bad trajectories. Various wars are flaring around the world, there is poverty and famine in Africa, capitalism is untrammelled by regulation and commerce is heavily globalized. The UN is doing its best, but most aid is outsourced to charities that are effectively corporate offshoots, and any protest of this system is rapidly quashed. The US political system is effectively paralyzed.

Extrapolating further, air pollution is so bad in most US cities that citizens wear filter masks, drinking water is unsafe (and subject to routine warnings), and major seas and river basins – the Mediterranean and the Mekong, for example – have died. Antibiotic-resistant strains of bacteria and STDs rage through the population, birth defects are rampant (and insurance premiums for infants are huge), chemical weapons have been used with abandon and stocks remain cached in unexpected places, like island beaches. Food supplies are unsafe and uncertain, and for the first time, life expectancy in the US is officially declining. Of course, the wealthy have options, (although in this book the acid rain falls upon the just and the unjust alike). A chain of supermarkets, called Puritan, run by a conglomerate called the Syndicate, offers "safe" food at exorbitant prices, there is a version of a hybrid car (called The Hailey), and they can live in gated communities, with high-priced security protection. Plane travel, however, is more likely to be a one-way trip. Earthworms and bees, the anchors of agricultural systems, have to be imported (the text is scattered with small ads, like the following – "Grade A MEXICAN HONEYBEES \$165.75/gallon! Grade A EUROPEAN BEES only \$220/Gallon! Best quality IRISH EARTHWORMS \$67.50/quart! Guaranteed live on delivery! – p. 125). As the system finally unravels, the US President (known as "Prexy" and who is more interested in Hollywood galas and other celebrity events than in ruling the country) blames the collapse on a group of foreign terrorists (Honduran, in this novel): the Tupa. Although assassination, sabotage and terrorist incidents mount through the novel, these are symptoms, not the cause, of a society in its death throes.

The lone "authoritative" voice against the tide – "garbage man turned savior" Austin Train (to paraphrase the blurb on the back of my mass market paperback edition) – is at

first unwilling and then unable to effect change. He is a former professor and popular author (like Bill McKibben, or Paul Ehrlich) whose ecological critiques drew unwanted attention from the authorities. Before the book begins he has had a nervous breakdown, and gone underground, working as a garbage man in Los Angeles. By the time he finds his voice, it is way too late. In the meantime, many impostors have taken on his name, and various cells of self-described followers engage in active, sometimes violent, resistance. Part of the plot revolves around his (in) decision to re-emerge, and he is given most of the main expository speeches (the novel does have its narrative flaws), but few listen, and he is ultimately undone. The message never gets through.

The populace is passive, too caught up in getting through each day, and all the minor and major illnesses and economic woes that afflict them. The characters we follow through the narrative are an assortment of “every-people.” They include a reporter who knows Austin Train, a cop injured in a massive avalanche triggered by a subsonic boom from a passing Concorde that destroys a newly built gated condo community, and an insurance salesman from the company that covered that condo community. Voices of conscience include an obsessed aid worker who witnesses some of the novel’s more shocking incidents and the Irish doctor brought in by the UN to try to find out why shipments of food aid drove entire communities insane. By about halfway through the book, most of these people are dead.

Pacifist “Trainites” live off the land in Colorado, the one example of a potentially sustainable community in the novel. However, their livelihood is destroyed, along with most US agriculture, when the supposedly natural earthworms turn out to be an aggressive, pink-dyed invasive species that destroys crops (the “natural” corporation was cutting corners). A small but pivotal role goes to a high-profile talk show host, Petronella Page. The face of corporate greed is represented by a wealthy entrepreneur named Jacob Bamberley, who has turned to charity, processing cassava into Nutripon, distributed by Globe Relief. The food turns out to be contaminated by chemicals in the groundwater, leading to a rash of insanity among the recipient populations in Africa and Honduras, one of the triggering incidents in the book. The novel also tracks Bamberley’s disintegrating family.

Brunner’s themes are many, but corporate malfeasance and corner cutting (e.g. water filters supplied by the private sector, while making profit from disaster, are irretrievably faulty, Puritan’s supplies are tainted, along with the earthworms, and other examples), and political (and social) impotence are at the forefront. In the end, the failure of any individual or entity in a position of power – from politicians to organizations to individuals – to take responsibility for the calamity emerges as the critical trope. This is a world entirely lacking resilience and the capacity to adapt. The sheep are not merely following the herd, they are being led to the slaughter.

Since *Sheep’s* publication, we have witnessed climate change emerge as a serious problem, far greater concern with chemicals in the environment, the impacts of political and corporate (non) action in this era of neoliberal

globalization, and rising societal concerns about science, technology, and the risks of modernity. The themes Brunner writes about just will not go away. To bring in the contemporary, journalist David Wallace Wells wrote an essay, “The Uninhabitable Earth,” which appeared in *New York* magazine on July 10, 2017 as the cover story. It made a big splash, triggering strong responses on blogs, in the news media, and on Facebook and Twitter. The actual magazine cover reworked the cover of the 1970s classic, *The Whole Earth Catalog*, reimagined as “The Doomed Earth Catalog.” In the piece, he asks and answers the question of when the earth might become uninhabitable for humans: sooner than we think. He cites heat, food scarcity, plagues, air pollution exacerbated by high temperatures, perpetual war economic collapse and poisoned oceans as contributing to our doom as a species. Sound familiar?

Wells’ essay is by no means science fiction. He bases the argument on existing studies and data, and interviews with the scientific communities. But it is on a continuum (without being non-fiction), with novels by writers who use such data to create a fictional context. Wells, along with Amitav Ghosh, a novelist whose 2016 book-length essay *The Great Derangement* is cited by Wells, decries the lack of imagination in the current era that may be part of our undoing. Looking back to *The Sheep Look Up* demonstrates a way to exercise this imagination to look forward.

3. *Sheep* in sci-fi critical literature

As a classic work of dystopian-disaster fiction, *The Sheep Look Up* is an important component of a whole group of works that appeared in the 1960s and 1970s that critiqued the “techno-optimist” perspective of a lot of science fiction at the time (Latham, 2007; Stern, 1976). The Oxford English Dictionary defines dystopia as an “imaginary place where everything is as bad as possible.” The concepts of utopia and dystopia are important in political theory (Thomas More) and environmental politics (e.g. Pepper, 2005, who stresses the procedural aspects of utopian thought, namely, it is how we improve that matters, not the ultimate destination).⁴

The classic fictional dystopias (e.g. Orwell’s 1984) are societies where political, economic and social structures make the lives of its citizens miserable or rob them of opportunity and expectations (whether they realize it or not). The “disaster” genre is different: a natural or man-made cataclysm that changes a society or community forever, from nuclear wars to hurricanes to earthquakes. “Eco-catastrophe” fiction is a thriving sub-genre of this field.⁵ *Sheep* fits between these categories as a pre-apocalyptic model. Not all dystopian works of fiction include disasters, not all disaster novels or movies depict dystopias. In Brunner’s work, the dystopian elements of world (and particularly US) society are the lead cause of the final apocalypse.

A review from *SF [Science Fiction] Weekly* talks about it having “an angry despair unique to SF.”⁶ *The Sheep Look Up* is both a product of its times and an eerily predictive (sounding) account of our current times. It echoes the angry radicalisms of the late 1960s, with the Vietnam War raging, global poverty and environmental degradation becoming apparent, and the emergence of new social and

protest movements. Brunner's is definitely a Western white male perspective, with the limitations, biases and omissions dating from that time – but he also situates *Sheep* using the legacies of colonialism, the military-industrial complex, the new intersections of poverty and inequality, race, sex and sexuality – and the violence associated with all of them. There are few parallels, but one – coming from a very different place and time – is Leslie Marmon Silko's novel *Almanac of the Dead* (1991; cited in Streeby, 2017).

Sheep has been out of print occasionally, but was re-released in a new edition with a foreword by author David Brin and afterword by James John Bell (2003), and, more recently, with an introduction by science fiction heavy-weight, Kim Stanley Robinson.⁷ In the foreword and afterword of the 2003 edition noted SF author David Brin and long-time environmental activist and social theorist James John Bell, respectively, call *Sheep* a hidden – hiding – classic and a call to action. Bell discusses the book as the “Ecodefense manual” for radical environmentalist groups in the 1970s – based directly on his own experience (including encountering an activist who called herself Austin). He goes through the litany of environmental catastrophes and policies under the George W. Bush administration, which already (at this time of writing) pale in comparison to the possible legacy of the Trump administration.

Gerry Canavan (2014) discusses *Sheep* in tandem with the movie *Snowpiercer* (2014), based on a French graphic novel about a train carrying the only surviving remnants of humanity around and around an icebound world – icebound because of human action – in a train sharply divided by class. They are examples of “necro-futurism,” the “endlessly rehearsed landscape of death and disaster that dominates contemporary visions of the coming decades [that] resigns us to a coming disaster we can anticipate but not prevent” (pp. 2–3). This concept builds on Subhabrata Bobby Banerjee's idea of necro-capitalism (Banerjee 2008), which “calls our attention to the degree to which the smooth functioning of capitalism in the present moment is dependent on the ever-more-efficient production of death” (p. 3) – except that the capitalism depicted in *Sheep* is very far from smooth-functioning. To quote Canavan: “The US, collapsing into maximum crisis on every level, still breeds nothing but denial and complacency, no matter how bad things get” (p. 10). Whether it is 2003, 2007, 2010 or 2018, quoting James John Bell, William Gibson, Kim Stanley Robinson and myself, respectively (one of these people is not like the others), *Sheep* has been described as a novel that describes each of those exact times in US history and contemporary experience.

4. *Sheep* and social science: Teaching and learning

How does *Sheep* speak to social science? How does this novel, a shrill warning in its own time that remains a warning today, contribute to our understanding of, and teaching about, global environmental change? *Sheep* was published in the same year that the Stockholm Conference on Humans and the Environment brought 113 countries together to establish the contemporary system of global environmental governance that provided a vision of hope for humanity's collective future. By comparison, what does a story of this disastrous magnitude bring to this field?

Over the years I have often recommended to students, colleagues and friends that they read this novel, although I am not convinced that many – in fact, any – followed through on this advice. There are several reasons why *The Sheep Look Up* (and similar works of fiction) do important work for the environmental scholar or student, and enhance our understanding of transitions, and the lack thereof. First, to speak to the present, how does it present scenarios so we might know things have not (yet) fallen apart? How does it show why they might, and how? And finally, does this novel suggest any way to avoid disaster? In this way, it connects with major roles of ecological science fiction (including cli-fi): the presentation of counterfactuals, the use of the imagination, and the social foundations of resilience, or lack thereof.

Counterfactuals and the imagination: Glass half full

One reason I recommend this book is because of the work it does as counter-factual analysis, creating a model of what might have been in the absence of direct evidence (Fearon 1991). So many of the environmental changes we discuss in classes are hard to see “on the ground”: climate change, for instance, is a good example, but any problem that happens at a distant time or in a distant place can be hard to grasp. Story-telling, and the building of characters, settings, and a novel's trajectory provide one aid in doing this (as we also see in the discussion of scenarios, below).

My students often despair of the effectiveness of policy and what few impacts we have had to make things better. I have suggested looking at *The Sheep Look Up* as a way of understanding the world as it might have been in the absence of the steps that were actually taken to address pollution (and other social justice issues) at national and international levels in the 1970s and beyond (and indeed in the absence of Ralph Nader and consumers' rights movements). To that extent, *Sheep* can be read as a distorted mirror image: things could have been a lot worse, and at some points at least, we (as a society or a set of political actors) have succeeded in veering off a pre-determined path over the edge of an environmental cliff. Maybe.

Further, any work that stimulates imagination, and gives students, or anyone, the possibility of drawing connections they might not otherwise have done, serves a positive function in academic disciplines that deal with complex problems and uncertain futures. Imagination is a powerful tool to catalyze political action (Milkoreit, 2017), even when it depicts disaster or dystopia. Social movements in the later 1970s and early 1980s, including the environmental movement, built themselves around the possibility of disaster, not the potential for hope. The anti-nuclear weapons movement (of which Brunner was a part) is yet another example. These movements have helped to generate real and positive change in Europe, the US and other western nations.

From warning to prediction: Glass half empty

Works of dystopian and disaster fiction are often read as warnings or predictions of what might come should we continue to follow certain paths. George Orwell's *1984* (1949), Aldous Huxley's *Brave New World* (1932), or Margaret Atwood's *Oryx and Crake* (2003) or *The Hand-*

maid's Tale (1985) examine societies where something has gone terribly wrong: the power of the state, the homogenizing effects of Fordist production coupled with pharmacopian advances, the widespread use of genetic modification, or the rise of a hyper-religious governing order. Classics in the genre take recognizable social, political, technological or ecological features of the world in which they were written and extrapolate these patterns to disastrous ends.⁸ Likewise, novels (or movies) of disaster guess at what might happen in the event of crisis, from nuclear war to climate change (to give human-made examples). The better works in the genre base their analysis on hard science available at their time of writing.⁹

The Sheep Look Up, seen from the vantage point of 1972, is a warning to a world starting to spin out of control to act to protect its environment and its people. Seen from the vantage point of 2018, even though to an extent we have avoided the scenarios detailed by Brunner, echoes crop up in the news and on-line. Since I first read the novel, I have far too frequently heard or read things that take me straight back to the novel. These include botched aid shipments, bee colony collapse, corporate corner-cutting, new research on the long-term effects of chemicals, ineffective presidents blaming problems on outside agents, drug-resistant forms of old diseases, conditions in "failed states" in Africa and so on. Even gated communities. The aftermaths of Hurricane Katrina, and in 2017, the cluster of hurricanes Harvey, Irma and Maria that whipped through Houston and Florida, and devastated Puerto Rico also reflect the social and ecological vulnerability of the novel's characters and settings.

One of the conclusions that emerges for this day and age is the we (the rich country/communities "we") may have dodged the bullet through the institutions and agencies established at national and global levels through the 1970s and 1980s. Another, however, is that the risks and hazards associated with production of goods and services that serve us, and growing middle classes in the emerging economies, have been displaced to other parts of the world less able to cope with them. Examples include how businesses and individuals ship dangerous wastes – electronic and plastic discards and scrap – to Ghana, Nigeria and China, the levels of air pollution in growing megacities such as Delhi, and mercury-laden goldmine tailings in Indonesia and Colombia, the sort of "slow violence" described by Rob Nixon in his influential 2011 book (Nixon, 2011), which is, in *Sheep*, put on fast forward.

The shrewdness and complexity of Brunner's worldview, and his depiction of what might happen should powerful interests meet no resistance from either civil society or the political establishment, may also resonate with current political contexts. Waves of "populism" have brought in leaders and processes – e.g. Brexit – who, or which, have (as has been the case with other populist movements in the past) served their own interests or the immediate interests of existing elites, with scant attention to the broader public or future generations. Dismantling environmental protections, regulation of banking systems and mortgage lending and healthcare, refusing to enact measures that control the spread of automatic rifles, pulling back from a positive role in the world, all serve to undermine positive

societal trends in recent decades. Again, these changes represent a thousand small cuts, not a dramatic framing event. And they demonstrate the novel's continued relevance today.

How things fall apart: Vulnerability, resilience, and transition paths

Like most of us, I am not immune to the pyrotechnics of disaster: what happens when the comet strikes earth, the bomb goes off, or world harvests fail? Does the dog survive (no dogs in *Sheep*, but no prizes in guessing that Brunner's ending would not be Hollywood's)? Will the human spirit triumph? Novels and TV series that have been allowed to follow a complex plot line – have the advantage of the long form: they can take the reader (and occasionally the viewer) on journeys that start with catastrophe and follow slow, often stop-and-start rebuilding processes. Works in this genre include the 1950s classics by John Wyndham (e.g. *Day of the Triffids*, 1951) or John Christopher (e.g. *No Blade of Grass*, 1956, where a plague wipes out every grass species on the planet – imagine that for a second), where small bands of humans are figuring out how to survive and even begin to rebuild.

These individual storylines provide a vicarious thrill (we are still talking fiction, after all). However, for a reader putting on her social scientist hat, the most interesting questions brought up by novels like *The Sheep Look Up*, are how things fall apart and (although not in *Sheep*) come back together again on the *larger* societal scale. These questions connect to research questions critical to environmental social science: what are the political causes of environmental and social disasters? Why are some societies or communities more vulnerable to destruction (as in unraveling of the social fabric, not physical destruction) than others?

The Sheep Look Up is a worthy addition to a reading list for anyone who wants to go deeper into questions of social and political vulnerability, a critical theme of recent work on climate change, for example (e.g. Adger, 2006), and even as a fictional counterpart to Eric Klinenberg's work on the Chicago heat wave of 1995 (Klinenberg, 2002).

Sheep is clearly, along with the "Club of Rome" related works it is based on, critical of ideas of unlimited and perpetual growth, demonstrating the real social, environmental and economic costs of that path (to take us back to necro-capitalism). An economic theory dating from the 1930s provides, perhaps unsurprisingly, a model of unavoidable collapse over time that both illuminates and is illuminated by the novel. The plot trajectory is analogous to cobweb theory, first put forward by Hungarian economist Nicholas Kaldor in 1934 (see Ezekiel, 1938). Cobweb theory models unstable, chaotic or unravelling market conditions over time (Hommes, 1998). It shows the conditions under which decisions made at one point in time that assume a constant or predictable future trajectory actually lead to systemic destabilization. The housing market is a case in point. Decisions made about constructing new houses are based on optimistic expectations of a growing market and higher demand. For a while, booming construction fuels demand, house prices keep rising, people keep getting financing in ways that defy common

sense, up until the point where the market collapses. We are most familiar with this phenomenon after the housing market bubble in the US burst in 2007–2008, as part of a global economic recession. The cobweb model highlights the decision points that demonstrate divergence of expectations and outcomes over time that lead to the exploded bubble. Decisions made by actors across the spectrum to ensure continuing economic growth fail to take into account (rapidly) declining ecological conditions. These mistakes are driven in part by incomplete information and an absence of regulatory frameworks or authorities that might control or guide these decisions. Pollution sources (increasing supply) overtake pollution sinks (which do not adapt to meet increasing pollution levels).

An ecological system can rarely recover under these conditions, nor can rational or backwards-looking expectations (based on prior experience) predict future trajectories (a state of non-linearity). This theory fits with Brunner's concept of "sheep" – humans who cannot see or comprehend the whole picture. They cannot adapt expectations, and even if they can, do not diverge from the crowd. It is a counter-analysis of the assumptions that go with technological optimism. Systems lack resilience or the ability to plan responses or predict outcomes. Perhaps, however, science fiction can provide clues or ways to highlight, or even address, this possibility.

Scenarios

Fiction is also a useful arena to play with these problems and ideas, when real world data are thankfully scarce (there are no human subjects requirements to write a novel!) and to employ the imagination that is so often lacking in academic and policy debates (R. Karlsson 2005). In effect, it can be a form of scenario analysis (Pulver and VanDeveer 2009), tools increasingly used by environmental scientists to model different environmental futures. Scenarios are "a 'story and simulation' approach in which storylines about how relevant events might unfold in the future are used to parameterize models of biophysical and social processes, each consistent with an alternate future" (Garb et al., 2008, p. 1, citing Alcamo, 2001; see also O'Neill et al., 2013). Characters and settings in novels show how human and cultural variations matter under different circumstances. Other works that fit this approach include Kim Stanley Robinson's *Climate Trilogy*, and his insightful 2005 essay, "Imagining Abrupt Climate Change: Terraforming Earth" published by Amazon.

A more extensive literature has recently emerged on scenario analysis and science fiction (e.g. Reitsma et al., 2017; Nikoleris et al., 2017). Nikoleris and co-authors connect individual works of climate science fiction to specific "shared socioeconomic pathways," scenarios that have been developed by scientists as possible future trajectories for the planet. They do this to connect the scientific and the literary realms, and to extend the realm of cultural analyses of climate change. As all the novels (while taking different plot paths) end with a positive shift towards mitigation and adaptation and new forms of social and political organization, they provide an optimism that differs from the angry destructivism of Brunner

and similar authors from his era. *The Sheep Look Up* is an extreme scenario, one we hope to avoid. Perhaps it is also important, in bringing science fiction into scenario analysis, to contemplate the complex conditions under which such a dystopic outcome occurs, and how extreme societal dysfunction across the continuum of issues and behaviors (not just climate change or even environmental decline) fatally undermines resilience. *Sheep* certainly challenges the technological optimism that seems to have taken hold among various political, scientific and economic elites in recent years.

It may be controversial, and difficult, for natural and social scientists working on scenario development and analysis to class their work with ecological science fiction, although these discussions have entered mainstream media and social science literatures.

5. In Conclusion: The sheep look forward

The Sheep Look Up ends in Ireland, with a vignette.

Opening the door to the visiting doctor, all set to apologize for the flour on her hands – she had been baking – Mrs. Byrne sniffed. Smoke! And if she could smell it with her heavy head cold, it must be a tremendous fire! "We ought to call the brigade!" she exclaimed. "Is it a hayrick?" "The brigade would have a long way to go," the doctor told her curtly. "It's from America. The wind's blowing that way."

Imagination is a weapon in raising environmental concern and understanding wider implications of existing social and economic systems for long-term sustainability. Fiction is an important venue for raising pressing social concerns that are hard to talk about or agree upon in more "real-world" arenas. To that end, works of speculative fiction, of which *The Sheep Look Up* is a classic example, can be an important part of our arsenal, and one that has the power to engage readers (and/or viewers), even as they remain within a comfort zone (of sorts; *Sheep* still has the power to give me actual nightmares).

Dystopian visions have a strong appeal in uncertain times. A 2009 *New Yorker* article (McGrath, 2009) discussed how many of our well-known, and less well-known, "doomsayers" are making capital out of our economic woes. But there are other types of ecological science fiction from the same era that have very different world-views from Brunner's. To give just one example, Marge Piercy's *Woman on the Edge of Time* (1976) whose main character is transported to several alternate futures, stresses the importance of agency and choice, a strong contrast with Brunner's far more structurally determined near future, where (at the point where the novel is set), actors, by the time they realize the severity of the situation, have very little ability to change the course the world is taking.

Frederic Jameson, a well-known voice in post-modernist literary criticism and political theory as well as science fiction criticism, is critical of the assumption that we can "imagine" the future. He does, however, in one groundbreaking essay lay out a critical function of science fiction:

[T]he apparent realism or representationality, of SF has concealed another, far more complex temporal structure: not to give us 'images' of the future... but rather to defamiliarize and restructure our experience of our own *present*, and to do so in specific ways distinct from all other forms of defamiliarization" (Jameson 2007, p. 286; emphasis in original).

Jameson's perspective is yet another reason why a novel such as *The Sheep Look Up*, still resonates nearly fifty years later.¹⁰ It holds a fractured mirror up to our present, but it also shows us a history we avoided in the early 1970s that may have come to pass had government, global, and social movement actors not swung into action. This era of science fiction is important to revisit for these reasons, and because it was a time when the climate imperative had not drowned out all the other dire problems humanity still faces.

The counterfactuals presented in reading *Sheep* demonstrate a bullet dodged. But has that bullet been dodged forever? Who are the "sheep" of today? With internet technology, "fake news" and emerging virtual reality technology, there is the potential for sheep-like conditioning. But the internet, news outlets, social media and so on, also give us information, access and mobilizing tools. The "sheep" in Brunner's novel are that way because they are focused on daily survival, even if they do not realize it. Stripped away social, environmental, health and employment protections create these conditions. These concerns are back at the forefront today. Some developed countries face, for the first time, consistent declines in life expectancy and health outcomes, and unparalleled attacks on labor and environmental protections. Developing countries – and poor communities within developed and emerging nations – bear the brunt of environmental risk. The question we are left with, is how can we build upon and strengthen the global, local and national institutions, norms and politics that provide countervailing force.

Notes

- ¹ *The Sheep Look Up* was first published in 1972 by Harper & Row. Any page numbers in this article refer to the Ballantine Books Edition mass market paperback (first printing, 1973).
- ² From his obituary in London's Daily Telegraph, published September 25 1995. He also composed the campaign song for the UK's Campaign for Nuclear Disarmament (CND).
- ³ Samuel Belson, "Science Fiction: Why it's a must read for IT Pros", July 13, 2012 at <http://www.zdnet.com/article/science-fiction-why-its-a-must-read-for-it-pros/>.
- ⁴ Although Utopia as a concept has its own purpose and intellectual trajectory – it is not the mirror opposite of dystopia.
- ⁵ For early works in this field, see JG Ballard, John Wyndham, John Christopher. Also, Marge Piercy (*Woman on the Edge of Time*, *He, She and It*), Ursula Le Guin (*The Dispossessed* and others), Margaret Atwood, Kim Stanley Robinson, John Barnes (*Mother of Storms*), and many, many more. Latham places Frank Herbert's

Dune (first serialized in 1963–64) as doing "probably more than any other single book to bring ecological awareness into the center of the genre" (Latham, 2007, p. 113).

- ⁶ Paul Di Filippo, "The Sheep Look Up", classic Sci Fi reviews, at: <ftp://asavage.dyndns.org/Literature/scifi.com/www.scifi.com/sfw/issue450/classic.html>.
- ⁷ (In a very limited special edition this author could not get hold of).
- ⁸ Note that many of these novels also function as satire: holding the mirror up to the present. Orwell's 1984 can be read (and was intended as) a critique of Britain in 1948, the year the book was written.
- ⁹ See, for example, Nevil Shute, *On the Beach* (1957), John Barnes, *Mother of Storms* (1995), and Kim Stanley Robinson's recent climate trilogy, beginning with *40 Signs of Rain* (2005).
- ¹⁰ For further entry points into this world, see Latham, 2007; Baccolini, 2004, and the on-line archives of *Science Fiction Studies*.

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Competing interests

The author has no competing interests to declare.

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